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TO	<u>JUL 03 2006</u>	
COMPANY		
FAX NUMBER	15712730025	OFFICE OF PETITIONS
FROM	Bruce E Harang	
DATE	2006-07-04 21:35:57 GMT	
RE	US Appl. No. 10/707,410 - Petition to Withdraw Notice of Abandonment dated 06/23/2006	

COVER MESSAGE

Attached is a 1 page Transmittal Form and a 50 page
Petition with
Exhibits in response to the Notice of Abandonment dated
06/23/2006 for:

US Appl. No.: 10/707,410
Filed: 12/11/2003
Inventor: John S McKenzie
Atty. Dkt.: 04112
Atty.: Bruce E Harang
Cust. No.: 23688
Art. Unit: 3654
Examiner: Thomas J Brahan
Conf. No.: 1409

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PTO/SB/21 (08-03)

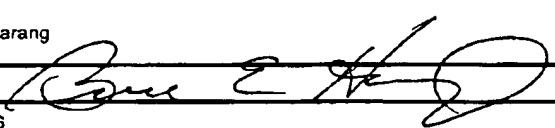
Approved for use through 08/30/2003. OMB 0851-0031

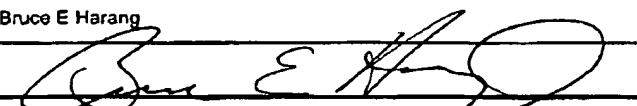
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/707,410	FAX RECEIVED JUL 03 2006 OFFICE OF PETITIONS
	Filing Date	12/11/2003	
	First Named Inventor	John S McKenzie	
	Art Unit	3854	
	Examiner Name	Thomas J Brahan	
Total Number of Pages in This Submission	51	Attorney Docket Number	04112

ENCLOSURES (Check all that apply)		
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input checked="" type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance communication to Technology Center (TC) <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Exhibits A, B, C, and copy of Notice of Abandonment dated 06/23/2006
Remarks Confirmation Number 1409		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Bruce E Harang
Signature	
Date	07/04/2006

CERTIFICATE OF TRANSMISSION/MAILING	
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.	
Typed or printed name	Bruce E Harang
Signature	
Date	07/04/2006

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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IN THE UNITED STATES PATENT OFFICE

FAX RECEIVED

JUL 03 2006

OFFICE OF PETITIONS

Application No.: 10/707,410
Applicant: John S McKenzie
Filed: 12/11/2003
Art Unit: 3654
Examiner: Thomas J Brahan

Docket No.: 04112
Customer No.: 23688
Confirmation No.: 1409

July 4, 2006

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

PETITION TO WITHDRAW HOLDING OF ABANDONMENT BASED ON
USPTO ERROR

Sir:

This is in response to the Notice of Abandonment dated 06/23/2006.
No additional fee is required.

Practitioner's Statement:

The attorney of record in this case states that he filed a timely response on 02/04/2006 to the then outstanding Office action dated 11/25/2005 and that he received both a successful transmission response from his fax service as well as from the USPTO fax service, acknowledging the receipt of said response on 02/04/2006. The response was timely filed without additional fees if filed on or before 02/25/2006. Thus, the attorney of record filed a timely response and the USPTO acknowledged said filing.

This attorney includes herewith as Exhibit A, a copy of the timely filed response comprising 43 pages plus the transmittal sheet of 1 page both showing complete and correct identification of the response, the outstanding Office action it was in response to, and proper and complete identification of the US Application No., filing date, inventor, art unit, Examiner, etc. to allow for proper handling of the response by the USPTO. This attorney also includes as Exhibit B a copy of the his fax service receipt showing successful transmission of the response, transmittal form, and fax cover sheet to the

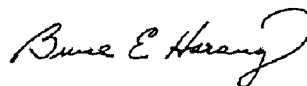
Appl. No.: 10/707,410
Amdt. Dated: 7/4/2006
Reply to Office action of: 06/23/2006

USPTO, and as Exhibit C a copy of the acknowledgement fax received from the USPTO fax service confirming the receipt of the response, transmittal form, and fax cover sheet. Also attached is a copy of the Notice of Abandonment dated 06/23/2006

Prayer for Relief:

In light of this attorney's statement and the submitted exhibits A – C, Applicant requests that the Notice of Abandonment be withdrawn and the timely filed Response be forwarded to the Examiner in this case for examination.

Respectfully submitted,



Bruce E. Harang
Registration No. 29,720
Tel.: (360) 903-4693

Attachments: Exhibit A – a copy of the timely submitted Response and Transmittal Form
Exhibit B – a copy of this attorney's fax service confirming successful transmission to the USPTO
Exhibit C – a copy of the USPTO acknowledgement of receipt of the correctly identified timely filed Response, Transmittal Form, and Fax cover sheet
Copy of the Notice of Abandonment dated 6/23/2006



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,410	12/11/2003	John S. McKenzie	04112	1409
23688	7590	06/23/2006	EXAMINER	
Bruce E. Harang PO BOX 872735 VANCOUVER, WA 98687-2735			BRAHAN, THOMAS J	
			ART UNIT	PAPER NUMBER
			3654	

DATE MAILED: 06/23/2006

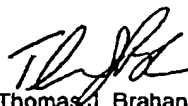
Please find below and/or attached an Office communication concerning this application or proceeding.

Notice of Abandonment	Application No.	Applicant(s)	
	10/707,410	MCKENZIE, JOHN S.	
	Examiner	Art Unit	
	Thomas J. Brahan	3654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 25 November 2005.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
 - (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection.
(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
 - (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
 - (d) ☒ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$_____ is insufficient. A balance of \$_____ is due.
The issue fee required by 37 CFR 1.18 is \$_____. The publication fee, if required by 37 CFR 1.18(d), is \$_____.
 - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The reason(s) below:

 6/29/06
 Thomas J. Brahan
 Primary Examiner
 Art Unit: 3654

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

Exhibit A

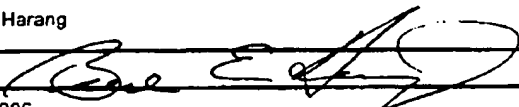
PTO/SB/21 (08-03)

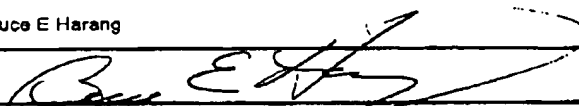
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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/707,410	FAX RECEIVED
	Filing Date	12/11/2003	
	First Named Inventor	John S. McKenzie	JUL 03 2006
	Art Unit	3654	
	Examiner Name	Thomas J Brahan	OFFICE OF PETITIONS
Attorney Docket Number	04112		
Total Number of Pages in This Submission <u>44</u>			

ENCLOSURES (Check all that apply)		
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment/Reply <input checked="" type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance communication to Technology Center (TC) <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): US5322335, US6955387, 3 dictionary pages
Remarks _____ Confirmation Number 1409		
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm or Individual name	Bruce E Harang	
Signature		
Date	02/04/2006	

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Signature		Date 02/04/2006

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IN THE UNITED STATES PATENT OFFICE

Application No.: 10/707,410
Applicant: John S. McKenzie
Filed: 12/11/2003
TC/Art Unit: 3654
Examiner: Thomas J Brahan

Docket No.: 04112
Customer No.: 23688
Confirmation No.: 1409

February 4, 2006

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

AMENDMENT

Sir:

This is in response to the Office Action dated 11/25/2005. This amendment is timely filed if filed on or before 02/25/2006.

No additional fee is required.

Kindly amend the above-identified application as follows:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Amendments to the Drawings begin on page 5 of this paper and include both an attached replacement sheet and an annotated sheet showing changes.

Remarks/Arguments begin on page 6 of this paper.

An **Appendix** including copies of US Patents 5,322,335 and 6,955,387 showing floor panels as being well known in the art and copies of the published definition of C-clamp from 3 separate dictionaries showing that C-clamps are well known in the art.

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

AMENDMENTS TO THE SPECIFICATION:

No amendments to the specification are presented herewith.

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (currently amended) A pivoting cargo platform, for use in the cargo area of a vehicle, providing a cargo platform that pivots from a storage position to a loading/unloading position, in cooperative combination comprising:

a cargo platform base having a substantially rectangular shape having four corners; and

a pivoting joint mounted at one corner of said cargo platform base and said pivoting joint capable of also being removably mounted to a vehicle cargo area floor panel using a C-clamp mounting device;

~~—thereby providing a cargo platform that pivots from a storage position to a loading/unloading position.~~

Claim 2 (original) The invention as claimed in Claim 1 wherein, said cargo platform base has a platform support member mounted opposite said pivoting joint.

Claim 3 (original) The invention as claimed in Claim 1 wherein, said cargo platform base has a pull strap mounted opposite said pivoting joint.

Claim 4 (original) The invention as claimed in Claim 2 wherein, said cargo platform base has a pull strap mounted opposite said pivoting joint.

Claim 5 (original) The invention as claimed in Claim 1 wherein, said cargo platform base and said pivoting joint are composed of a plastic capable of vacuum forming.

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

Claim 6 (original) The invention as claimed in Claim 1 wherein, said cargo platform base and said pivoting joint are composed of a plastic capable of injection molding.

Claim 7 (original) The invention as claimed in Claim 1 wherein, said pivoting joint portion mounted on said cargo platform base is molded as an integral part of said cargo platform base.

Claim 8 (original) The invention as claimed in Claim 1 wherein, said pivoting joint comprises a pair of plastic pivot mounting brackets joined together by a metal pivot pin.

Claims 9 – 10 (canceled)

Claim 11 (currently amended) The invention as claimed in Claim 10 wherein, said pivoting cargo platform is removably mounted to a removable floor panel.

Claim 12 (canceled)

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

AMENDMENTS TO THE DRAWINGS:

There are not amendments to the drawings presented herewith.

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

REMARKS/ARGUMENTS

Claims 1 – 8 and 11 remain in this application. Claims 9, 10, and 12 have been canceled. Claim 1 has been amended to incorporate the limitations of original Claims 9, 10, and 12 therein. Claim 11 has been amended to depend on Claim 1 instead of now canceled Claim 10.

No new matter has been introduced by these amendments.

The Examiner has objected to the drawing filed with Applicant's amendment dated September 21, 2005. Specifically, the Examiner states: "The structure of the C-clamp and its mounting to the floor panel were not part of the original disclosure. The amendment to the specification must which discusses the new matter must be canceled".

Applicant traverses the Examiner's objection. The structure of one form of a C-clamp and its mounting to the floor panel are clearly discloses in the original Figure 4 and in the specification in paragraphs [0021] and [0024]. Figure 4 clearly shows one embodiment of a C-clamp mounted to the edge of a floor panel. In addition, the original paragraph [0024] clearly and specifically disclosed both a preferred structure of a suitable C-clamp and its mounting to the floor panel to which Figure 6 was added to illustrate that which had originally disclosed in said paragraph [0024]. Furthermore, structure of C-clamps is well known to those skilled in the art. For example the structure of a C-clamp is shown to be well known by the definitions published in the Ultralingua dictionary (copy of the relevant page attached for the Examiner's convenience) and in the Merriam-Webster dictionary (copy of the relevant page attached for the Examiner's convenience) as well as the MS Encarta dictionary (copy of the relevant page attached for the Examiner's convenience). Floor panels suitable for use in the present invention are also well known in the art as illustrated by U.S. Patents 5,322,335 and 6,955,387 (copies attached for the Examiner's convenience) both of which disclose removable floor panels. Thus, those skilled in the art need no further disclosure over that given by Applicant to reproduce his claimed invention. Clearly, when viewed in this light, and in light of the general knowledge of one skilled in the art, the Examiner's objection to the amended specification is unfounded and removal of the objection is requested.

The Examiner has objected to the drawings under 37 C.F.R. §1.83(a). Specifically the Examiner states, "The drawings must show every feature of the invention specified in

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

the claims. Therefore, the removable floor panel of claim 11 and the clamp of claim of claim 12, must be shown, or the feature must be canceled from the claims. No new matter may be entered".

Applicant traverses the Examiner's objection. Applicant has clearly shown a removable floor panel in Figure 6 as object (8) and a floor panel which may be permanent or removable in Figure 4 as object (3). In addition, as mentioned above, removable floor panels are well known in the art as evidenced, for example, by U.S. Patents 5,322,335 and 6,955,387 (copies attached for the Examiner's convenience). Likewise, the structure of C-clamps is clearly illustrated in one form in Figure 4 and in another commonly known structural form in Figure 6 as object (6). In addition, as mentioned above, C-clamps and their structure are well known in the art as evidenced by the dictionary definitions in the Ultralingua dictionary (copy of the relevant page attached for the Examiner's convenience) and in the Merriam-Webster dictionary (copy of the relevant page attached for the Examiner's convenience) as well as the MS Encarta dictionary (copy of the relevant page attached for the Examiner's convenience). Clearly, when viewed in this light, and in light of the general knowledge of one skilled in the art, the Examiner's objection to the drawings is unfounded and removal of the objection is requested.

Claims 1, 2, 10, and 11 were rejected under 35 U.S.C. 102(b) as being anticipated by Bouza. Specifically, the Examiner states:

Bouza shows a pivoting cargo platform for use in a cargo area of a vehicle, in cooperative combination comprising:

A cargo platform base (the base of seat 30; note any platform can be used for cargo) having a substantially rectangular base having four corners; and

A pivoting joint (34) mounted at one corner of the cargo platform base (the seat; note the seat is behind and offset to one side to have joint under a corner of the seat) and the pivoting joint being capable of also being mounted to a vehicle cargo area floor,

thereby providing a cargo platform that pivots between various positions that can be considered as storage positions and loading/unloading positions.

A support member (50) is located opposite the pivoting joint from the platform, as recited in claim 2. The platform is removably mounted under a floor panel (22)

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

which is also removable (inherently), as recited in claims 10 and 11.

Applicants respectfully traverse this rejection. A fair reading of the Bouza (4,979,458) reference discloses an offset chair pedestal for use in a watercraft and requiring that the pedestal be mounted both to a floor panel and to the hull of the watercraft beneath the floor panel (see for example, Col. 3, lines 41 – 53, Col. 4, lines 23 – 28, and Col. 4, lines 39 – 42). In addition, to function properly the pedestal must be offset, must provide a vertical height to allow the mounted chair occupants fishing line to clear the side gunnels of the watercraft (see for example, Col. 5, lines 52 – 59) and also provide a rotational locking mechanism in order to provide the necessary stability to the chair when in use (see for example, Col. 3, lines 61 – 66). Further, in order for the chair to be suitable for its intended use it must be mounted so the pedestal is in the center of the chair bottom not in one corner thereof (see for example, Fig. 1). The Examiner's argument that the seat is offset to provide a joint under the corner of the seat is in error as the joint mounting the seat is always in the center of the seat and a second joint mounting the seat pedestal having an offset shaft does not create a single joint in one corner of the seat. Finally, due to the offset pedestal and the weight to be carried by the chair the pedestal must be fixedly attached (bolted) to both the floor panel and the hull by means of brackets themselves bolted to the floor panel and hull respectively (see for example, Col. 3, lines 41 – 53, Col. 4, lines 23 – 28, and Col. 4, lines 39 – 42). The Examiner's argument that bolted attachment means provide removal as opposed to fixedly attachment is contrary to the well-known attachment means art. Furthermore, there is no disclosure or teaching or suggestion that the floor panel of the boat of the Bouza reference is removable and there is nothing inherently removable about the deck of a watercraft. On the contrary it is well understood in the watercraft art that boat decks are permanently fixed to the hull. Applicant's claimed invention eliminates the critical second mounting requirement as well as the need for an offset pedestal and pedestal height adjustment and rotational locking means, as well as the need for mounting collars bolted to both the vehicle cargo floor panel and the vehicle frame. There is nothing in the reference that discloses, teaches, or suggests the necessary impetus required for one skilled in the art to modify the reference's critical requirement of an offset mounting arm and the critical requirement to fixedly mount the platform to the hull of the craft as well as to the deck of the craft to arrive at Applicant's claimed invention.

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

Clearly the cited reference does not disclose, teach, or suggest the use of an easily removable cargo platform which pivots in and out of the vehicle cargo area by a pivoting pin joint located in one corner of the substantially rectangular cargo platform. When viewed in this light it is clear that the claimed invention is now ready for allowance and such action is respectfully requested.

Claims 1, 7, 10, and 12 were rejected under 35 U.S.C. 102(b) as being anticipated by McClendon et al. Specifically, the Examiner states:

McClendon et al shows a pivoting cargo platform comprising:

- a cargo platform base (platform 20) having a substantially rectangular base having four corners; and
- a pivoting joint (at either support arm 40) mounted at one corner of the cargo platform base (20) and the pivoting joint being capable of also being mounted to a vehicle cargo area floor (at 74);

thereby providing a cargo platform that pivots from a storage position to a loading/unloading position.

The platform is plastic and the pivot joint portion of the platform base is integral with the rest of the platform, as recited in claim 7. The platform is clamped in place, as recited in claims 10 and 12.

Applicants respectfully traverse this rejection. A fair reading of the McClendon et al. (6,119,809) reference discloses a portable boat ladder suitable for a retriever dog to leave and enter a watercraft in the process of retrieving shot waterfowl. The ladder which is platform like requires a second platform be connected by at least two corner pivot hinges or a piano type hinge to a first platform (see for example, Figs. 1 and 2, and Col. 3, lines 22 – 31). This first platform must then be hinged in similar manner along a second side 90 degrees to the second platform to a mounting apparatus requiring two clamps to secure it to the gunnels of a watercraft as well as two padded feet to rest against the outside hull of said watercraft to stabilize the ladder (see for example, Figs. 2, 3 and 5, and Col. 3, line 61 – Col. 4, line 8). In use the first platform must first be folded downward to open it and then the second platform must be folded open 90 degrees from the first platform-folding angle to lower the two-piece platform ladder to allow a retriever to climb out and into the watercraft (see for example, Fig 5, and Col. 5, lines 30 – 43). Because the second platform end farthest from the hinge point has no support under it

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

unless the watercraft is fast aground the use of a load bearing support is useless. Further, the ladder can only swing into the watercraft in a folded closed non-use position (see for example, Fig. 6, and Col. 5, lines 10 – 21). Furthermore, if the reference device was attached to a vehicle floor panel it would be positioned vertically and would not be able to have cargo rest on it without some type of cargo attachment means. In any case the reference platform must also utilize two clamps to attach it to a support whereas Applicant's claimed invention requires only one, removing a critical element of the reference teaching. There is nothing in the reference that discloses, teaches, or suggests the necessary impetus required for one skilled in the art to modify the reference's critical need for two platforms, or for mounting on a vertical support to arrive at Applicant's claimed invention.

Clearly the cited reference does not disclose, teach, or suggest the use of an easily removable cargo platform which pivots in and out of the vehicle cargo area by a pivoting pin joint located in one corner of the substantially rectangular cargo platform. When viewed in this light it is clear that the claimed invention is now ready for allowance and such action is respectfully requested.

Claims 1 – 4, 7, and 10 were rejected under 35 U.S.C. 102(b) as being anticipated by Hurst. Specifically, the Examiner states:

Hurst shows a pivoting cargo platform comprising:
a cargo platform base (tray 14) having a substantially rectangular base having four corners; and a pivoting joint (15) mounted at one corner of the cargo platform base (the right corner and the left corner as seen in figure 2) and the pivoting joint being capable of also being mounted to a vehicle cargo area floor (inherently due to magnets 19);

thereby providing a cargo platform that pivots from a storage position to a loading/unloading position.

Pull straps (17) are support members located opposite the pivoting joint as recited in claims 3 and 4. The platform is plastic and the pivot joint portion of the platform base is integral therewith, as recited in claim 7. The platform is removably mounted, due the magnets, as recited in claim 10.

Applicants respectfully traverse this rejection. A fair reading of the Hurst (5,762,245) reference discloses a hinged folding serving tray for mounting on the

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

underside of an automobile truck deck which cannot hold cargo except when the truck deck is in an open position (see for example Figs. 1 and 3, and Col. 2, lines 28 – 42, and Col. 28 – 47). Furthermore, the teaching of Hurst requires the use of two locking braces (see for example Figs. 1 – 3, and Col. 3, lines 12 – 22) which are not required by Applicant's present invention, as well as a hinge along one edge (see for example Figs. 1 – 3, and Col. 2, lines 32 – 34) not a pivot in a single corner as in Applicant's present invention. The Examiner's argument that the tray (14) is mounted at one corner as seen in Figure 2 is clearly an incorrect statement of the references teaching. The tray (14) is mounted to the base (13) by a piano hinge running the length of complementary edges of the tray (14) and the base (13). Likewise, the assertion of "inherent removable mounting to a floor panel because there are magnets is not supported by the art. Due to safety and weight considerations most floor panels in vehicles today consist of non-magnetic materials and for sound proofing most have soft textured non-magnetic exterior surfaces making magnetic mounting impossible. Furthermore, even if such mounting was possible the references tray (14) would open to a near vertical position making cargo loading and retention impracticable at best. Also, the support members (17) would not provide support for cargo in a vehicle cargo area because the platform (14) would be at a near vertical position and any cargo would not be load bearing on the surface of said platform (14). There is nothing in the reference that discloses, teaches, or suggests the necessary impetus required for one skilled in the art to modify the reference's piano hinge, and the requirement for folding open to arrive at Applicant's claimed invention.

Clearly the cited reference does not disclose, teach, or suggest the use of an easily removable cargo platform which pivots in and out of the vehicle cargo area by a pivoting pin joint located in one corner of the substantially rectangular cargo platform. When viewed in this light it is clear that the claimed invention is now ready for allowance and such action is respectfully requested.

Claims 1, 2, and 9 were rejected under 35 U.S.C. 102(b) as being anticipated by Megargle et al. Specifically, the Examiner states:

Megargle et al. shows a pivoting cargo platform comprising:

a cargo platform base (plate member 72) having a substantially rectangular base having four corners; and
a pivoting joint (at post structure 36) mounted at one corner of the cargo platform base (72) and the pivoting

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

joint being capable of also being mounted to a vehicle cargo area floor (at the lower end of the post);
thereby providing a cargo platform that pivots from positions that can be considered as a storage position or a loading/unloading position.

A platform support member (42) is located opposite the pivoting joint from the platform, as recited in claim 2. It is permanently mounted in the cargo area, to the same degree as applicant's platform, as permanent is a relative term, as recited in claim 9.

Applicants respectfully traverse this rejection. A fair reading of the Megargle et al (3,391,960) reference discloses a cantilevered folding platform for mounting within the passenger compartment of a vehicle useable as alternatively, an armrest between the front row of seats or a table behind the front row of seats (see for example Figs. 1 and 2, and Col. 1, lines 11 – 23). In order for the platform to be used as an armrest it must fold along its long axis into a closed narrow configuration. In order for the platform to be used as a table or work surface it must be moveable along the long axis in a horizontal plane and then rotate around the mounting post pivot (see for example, Col. 3, lines 25 – 44). Furthermore, the pivot post must be mounted to a fixed reinforced floor pan bracket (see for example, Figs. 1 and 3, and Col. 2, line 61 – Col. 3, line 3). Applicant's claimed invention does not need a fixed reinforced floor pan bracket, in fact it does not require mounting to the floor pan of a vehicle at all. In addition, Applicant's present invention does not require the platform to fold along its long axis to be used to load, carry, and unload cargo. Finally, Applicant's claimed invention does not require that the platform have the ability to travel in a longitudinal horizontal manner to be moved from inside the cargo area to the unloading position. The Examiner clearly can not reach Applicant's claimed invention without first having knowledge of Applicant's invention and then impermissibly taking parts of a reference teaching while ignoring other critical portions of the same reference, critical portions required for said reference invention to function. Furthermore there is not disclosure, teaching, or suggestion in the reference or Applicant's claimed invention providing the necessary impetus to make such alterations of the reference. The Examiner's assertion that "... permanent is a relative term..." is not supportable. Unless specifically defined in a patent specification words are given their generally accepted and understood meanings. Here Applicant has not provided any special meaning to the word "permanent" and thus, the common definition applies which

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

is “everlasting, not changing, or not expected to change”. There is nothing relative about the word “permanent” or its use by Applicant.

Clearly the cited reference does not disclose, teach, or suggest the use of an easily removable cargo platform which pivots in and out of the vehicle cargo area by a pivoting pin joint located in one corner of the substantially rectangular cargo platform. When viewed in this light it is clear that the claimed invention is now ready for allowance and such action is respectfully requested.

Claims 5, 6, and 8 were rejected under 35 U.S.C. 103(a) as being unpatentable over McClendon et al. Specifically, the Examiner states:

McClendon et al shows the basic claimed pivoting platform made of plastic but varies from the claims by not specifying that the plastic is capable of being vacuum formed (claim 5), by injection molding (claim 6), or that the pin at the joints are metal (claim 8). However these would have been obvious design considerations within the level of ordinary skill in the art at the time the invention was made by applicant, since it has been held to be within the general skill of a worker to select a known material on the basis of suitability for the intended use as a matter of obvious design choice, see *In re Leshin*, 125 USPQ 416.

Applicants respectfully traverse this rejection. A fair reading of the McClendon et al. (6,119,809) reference as discussed above discloses a portable boat ladder suitable for a retriever dog to leave and enter a watercraft in the process of retrieving shot waterfowl. The ladder which is platform like requires a second platform be connected by at least two corner pivot hinges or a piano type hinge to a first platform (see for example, Figs. 1 and 2, and Col. 3, lines 22 – 31). This first platform must then be hinged in similar manner along a second side 90 degrees to the second platform to a mounting apparatus requiring two clamps to secure it to the gunnels of a watercraft as well as two padded feet to rest against the outside hull of said watercraft to stabilize the ladder (see for example, Figs. 2, 3 and 5, and Col. 3, line 61 – Col. 4, line 8). In use the first platform must first be folded downward to open it and then the second platform must be folded open 90 degrees from the first platform-folding angle to lower the two-piece platform ladder to allow a retriever to climb out and into the watercraft (see for example, Fig 5, and Col. 5, lines 30 – 43). Because the second platform end farthest from the hinge point has no support under it unless the watercraft is fast aground the use of a load bearing support is useless. Further,

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

the ladder can only swing into the watercraft in a folded closed non-use position (see for example, Fig. 6, and Col. 5, lines 10 – 21). While the reference does disclose the use of plastic this by itself is not a teaching of Applicant's present invention as the claims it is cited against are dependent on the features of the invention clearly not disclosed by this reference. Thus, clearly the substitution of a particular plastic or any plastic to the reference invention does not reach Applicant's claimed invention. Furthermore, there is not the required impetus within the cited reference to reach Applicant's invention.

Clearly the cited reference does not disclose, teach, or suggest the use of an easily removable cargo platform which pivots in and out of the vehicle cargo area by a pivoting pin joint located in one corner of the substantially rectangular cargo platform. When viewed in this light it is clear that the claimed invention is now ready for allowance and such action is respectfully requested.

Claims 5, 6, and 8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hurst. Specifically the Examiner states:

Hurst shows the basic claimed pivoting platform made of plastic, see column 2, line 44, but varies from the claims by not specifying that the plastic is capable of being vacuum formed (claim 5), by injection molding (claim 6), or that the hinge pin is made of metal (claim 8). However these would have been obvious design considerations within the level of ordinary skill in the art at the time the invention was made by applicant, since it has been held to be within the general skill of a worker to select a known material on the basis of suitability for the intended use as a matter of obvious design choice, see *In re Leshin*, 125 USPQ 416.

Applicants respectfully traverse this rejection. A fair reading of the Hurst (5,762,245) reference as discussed above discloses a hinged folding serving tray for mounting on the underside of an automobile truck deck which cannot hold cargo except when the truck deck is in an open position (see for example Figs. 1 and 3, and Col. 2, lines 28 – 42, and Col. 28 – 47). Furthermore, the teaching of Hurst requires the use of two locking braces (see for example Figs. 1 – 3, and Col. 3, lines 12 – 22) which are not required by Applicant's present invention, as well as a hinge along one edge (see for example Figs. 1 – 3, and Col. 2, lines 32 – 34) not a pivot in a single corner as in Applicant's present invention. While the reference does disclose the use of plastic this by

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

itself is not a teaching of Applicant's present invention as the claims it is cited against are dependent on the features of the invention clearly not disclosed by this reference. Thus, clearly the substitution of a particular plastic or any plastic to the reference invention does not reach Applicant's claimed invention. Furthermore, there is not the required impetus within the cited reference to reach Applicant's invention.

Clearly the cited reference does not disclose, teach, or suggest the use of an easily removable cargo platform which pivots in and out of the vehicle cargo area by a pivoting pin joint located in one corner of the substantially rectangular cargo platform. When viewed in this light it is clear that the claimed invention is now ready for allowance and such action is respectfully requested.

The Examiner's statement that the claims do not "...recite specific limitation for a cargo area..." is incorrect. The Applicant's claims as originally filed and as amended have consistently specified "A pivoting cargo platform, for use in the cargo area of a vehicle..." (see, for example, Claims 1 – 8 and 11). The statement is also clearly incorrect in regards to the cited reference Bouza as it is well known that where a seat is located in a watercraft is a "seating area" and the fact that one could put a piece of cargo on the seat does not make it "cargo area". Furthermore, the statement that "...and the seat can be moved into and out of this area" does not change the fact that a seat is seating area and that the area around the seat where the seat may be located clearly can not be cargo area or the seat occupant would not be able to utilize the movement function of the seat. Quite clearly the Examiner is impermissibly rewriting the disclosure of the Bouza reference to try and reach Applicant's claimed invention.

The Examiner's statement regarding the McClendon reference is equally incorrect. This reference requires as critical elements two pivot joints, one on each end of one edge of a platform. Not a single pivot joint. Likewise, the fact that two such double pivot point platforms are required is also critical to the McClendon teaching. Finally, the McClendon disclosure requires the device to be mounted by two clamps to a substantially vertical surface which would position the device in a position not allowing for cargo storage if mounted to a horizontal floor panel.

The Examiner's statement that a piano hinge is a hinge at both corners is patently incorrect. This definition of a piano hinge is in direct conflict with the well-known definition of a piano hinge as shown, for example, by the Hurst reference. Furthermore,

Appl. No.: 10/707,410
Amdt. Dated: 2/4/2006
Reply to Office action of: 11/25/2005

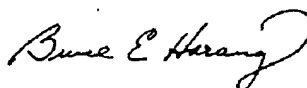
the fact that a support is also called a pull strap does not obviate the fact that the supports must lock in an extended condition for the platform of Hurst to be useable. Finally, claiming that one can define a piano hinge as having "each small segment of the hinge ... considered as a joint to have some joints mounted in just one corner" is clearly a misstatement of fact to those skilled in the art.

The Examiner's argument that reciting a pivot joint without reciting how a pivot joint works allows for the use of a reference that requires horizontal as well as pivotal movement is again clearly in opposition to accepted understanding of those skilled in the art. Those skilled in the joint arts would not expect a pivot joint to move other than pivotally around a center point and to claim otherwise is simply flying in the face of accepted knowledge.

The Examiner's statement that "The claims only recite a pivoting joint at a corner of a rectangular platform for moving the platform between any two positions" is incorrect. The claims actually recite a "A pivoting cargo platform, for use in the cargo area of a vehicle, providing a cargo platform that pivots from a storage position to a loading/unloading position, in cooperative combination comprising a cargo platform base having a substantially rectangular shape having four corners; and a pivoting joint mounted at one corner of said cargo platform base and said pivoting joint capable of also being removably mounted to a vehicle cargo area floor panel using a C-clamp mounting device". A far different description than the one proffered by the Examiner.

In view of the remarks herein, and the amendments hereto, it is submitted that this application is in condition for allowance, and such action and issuance of a timely Notice of Allowance is respectfully solicited.

Respectfully submitted,



Bruce E. Harang
Registration No. 29,720
Tel.: (360) 903-4693

Attachments



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United States Patent [19]

Niemi

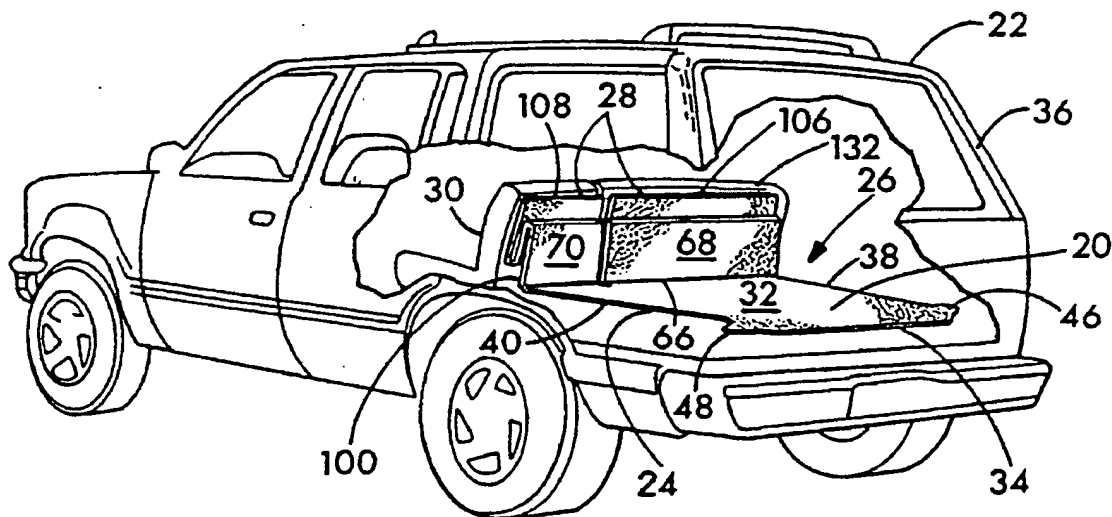
[11] Patent Number: **5,322,335**[45] Date of Patent: **Jun. 21, 1994**[54] **AUTOMOTIVE FLOOR LINER**[75] Inventor: **Karl A. Niemi, Waunakee, Wis.**[73] Assignee: **Penda Corporation, Portage, Wis.**[21] Appl. No.: **114,097**[22] Filed: **Aug. 30, 1993**[51] Int. Cl.³ **B62D 25/00**[52] U.S. Cl. **296/97.23; 296/39.1**[58] Field of Search **296/97.23, 39.1, 37.16**[56] **References Cited****U.S. PATENT DOCUMENTS**

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Primary Examiner—Joseph D. Pape*Attorney, Agent, or Firm*—Lathrop & Clark[57] **ABSTRACT**

Protection for the rear carpet areas of an automobile such as a sport utility vehicle is provided by a unitary

sheet of heavy-gauge extruded, high-density polyethylene. The floor liner has a floor panel which covers the floor of the cargo area of a sports utility vehicle. The floor panel has sides which extend along and are tucked under the wheel well trim panels on either side of the cargo area. Integrally formed with, and attached to, the forward edge of the floor panel, are two cargo extension panels. The cargo extension panels form a continuation of the forward edge of the cargo floor panel and are separated from each other by a seat back accommodation slot. This slot divides the cargo extension panels so that each panel corresponds to the width of the seat back positioned forward of each panel. Continuing on from the cargo extension panels are recumbent panels which are integrally formed with and joined to the cargo panels. These in turn are joined to integrally formed seat back panels. The joints between the panels are of the type known as a "living hinge" and are cold-formed into the material of the liner itself. The double living hinges provide resilient, long-life hinges impervious to liquids and provide flat extended edges of improved appearance and safety. The spring-loaded extension panel of a vehicle urges the seat back panel against a seat back and hence retains the liner without additional fasteners.

20 Claims, 6 Drawing Sheets

U.S. Patent

June 21, 1994

Sheet 1 of 6

5,322,335

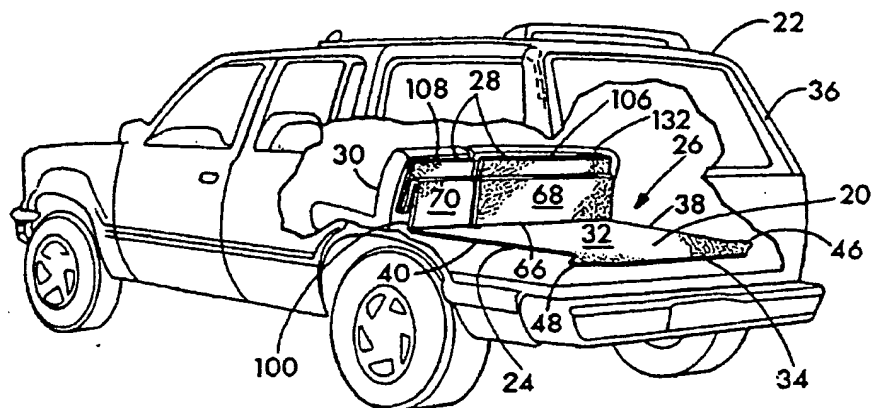


FIG. 1

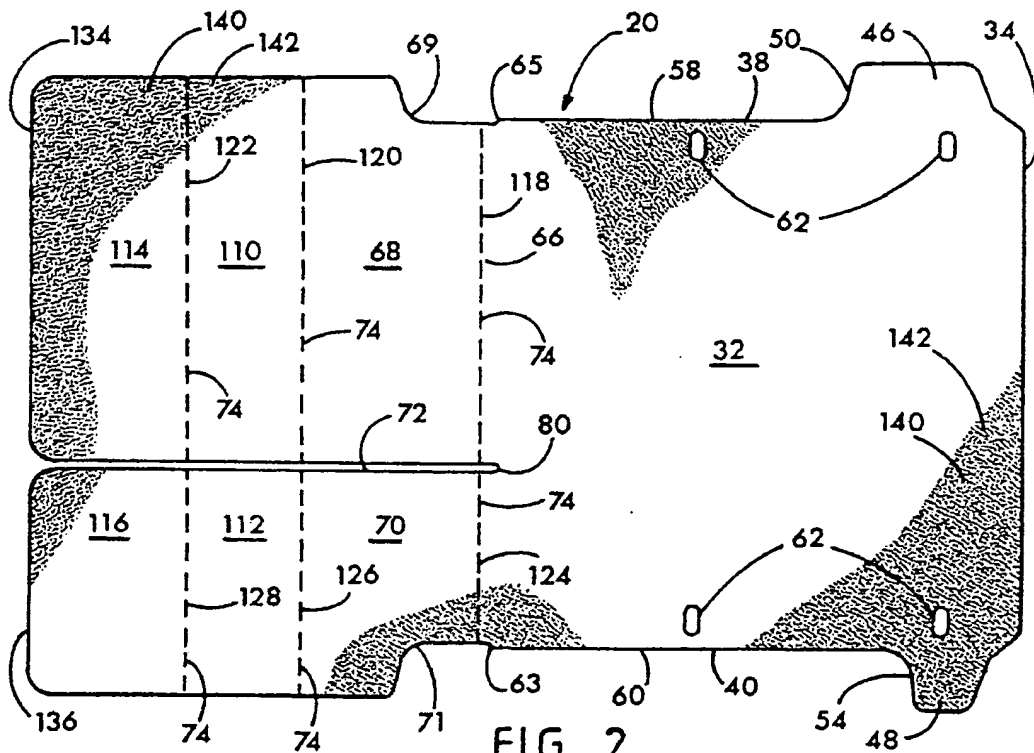


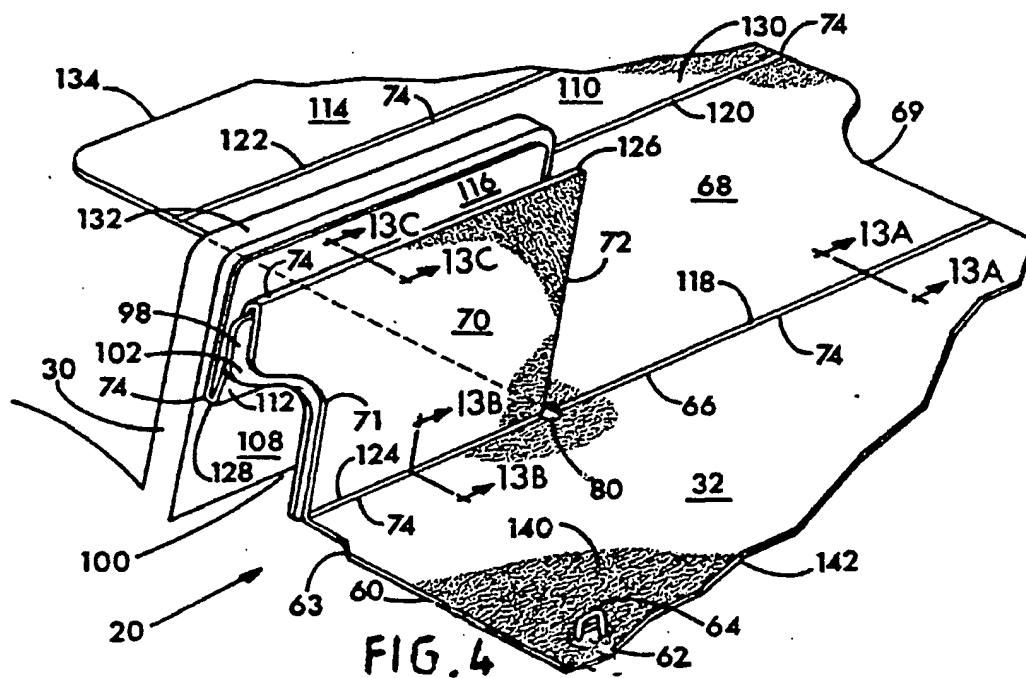
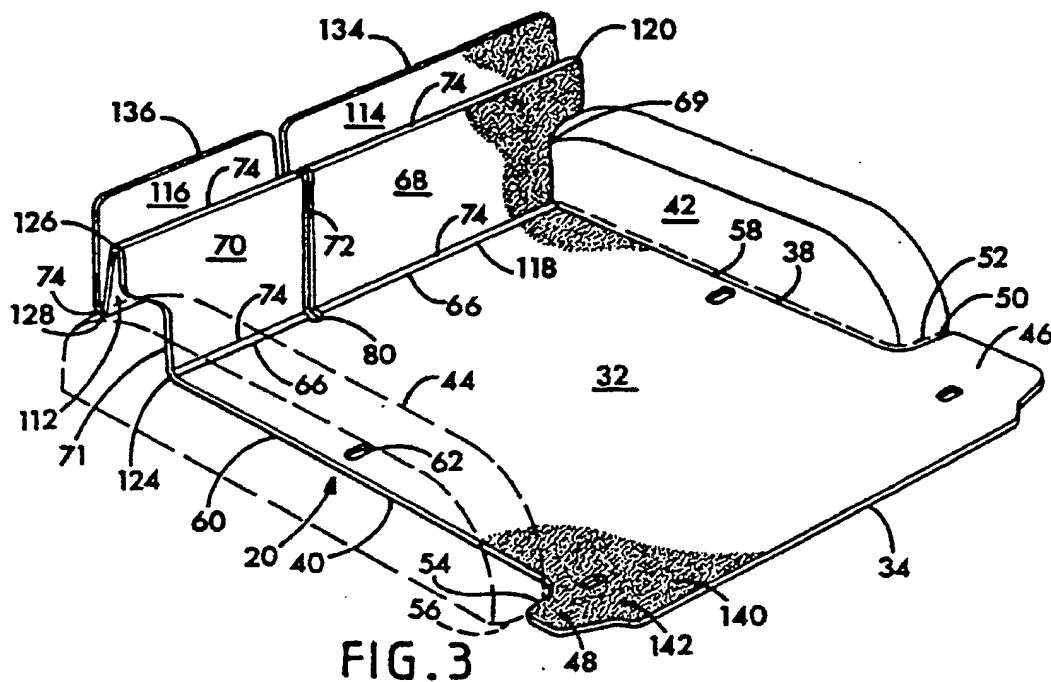
FIG. 2

U.S. Patent

June 21, 1994

Sheet 2 of 6

5,322,335

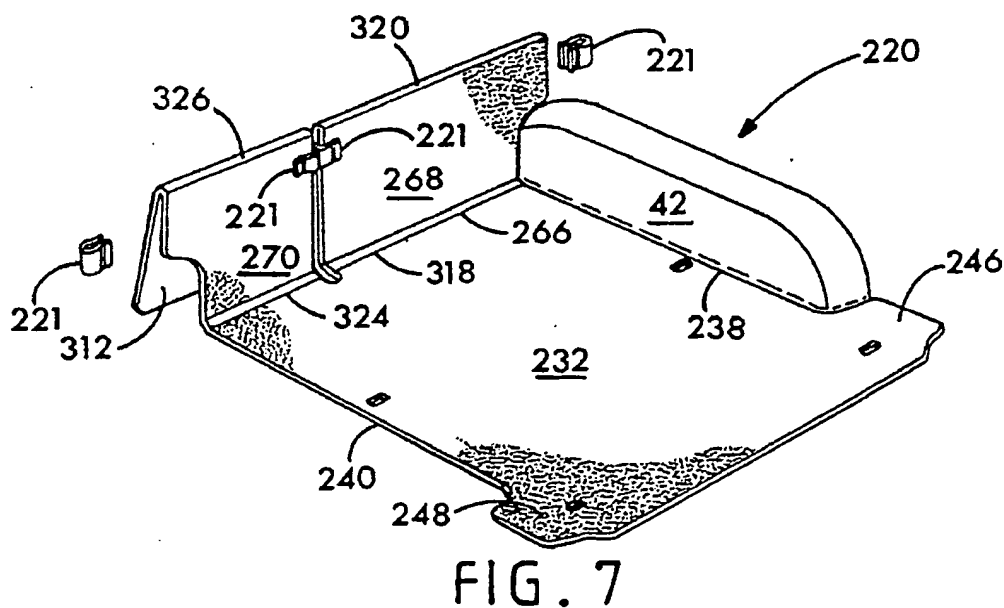
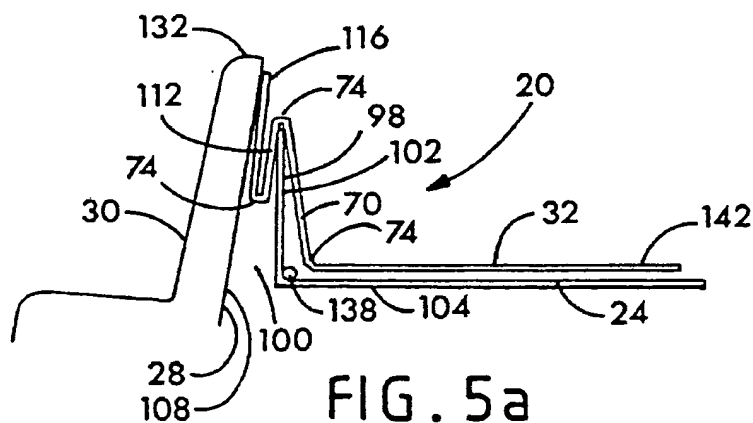
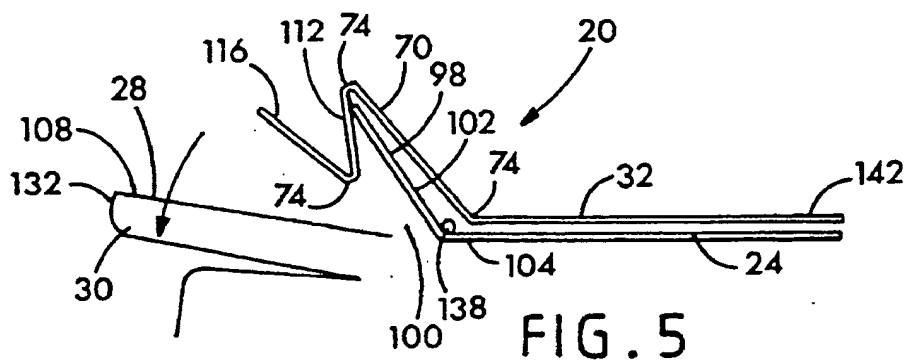


U.S. Patent

June 21, 1994

Sheet 3 f 6

5,322,335



U.S. Patent

June 21, 1994

Sheet 4 of 6

5,322,335

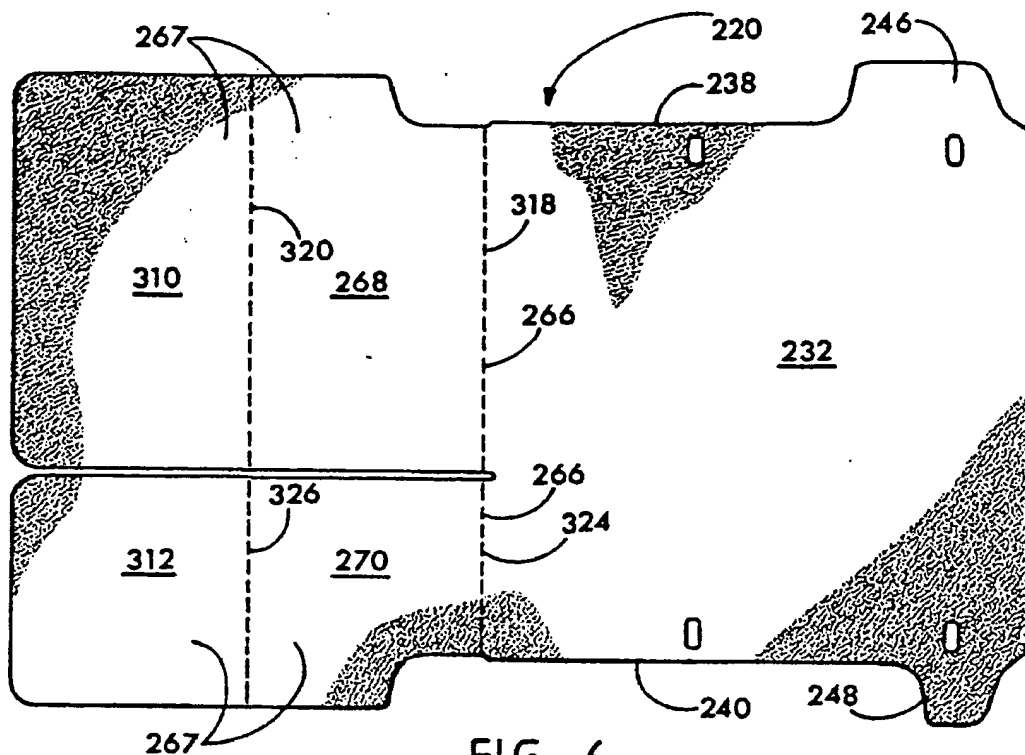


FIG. 6

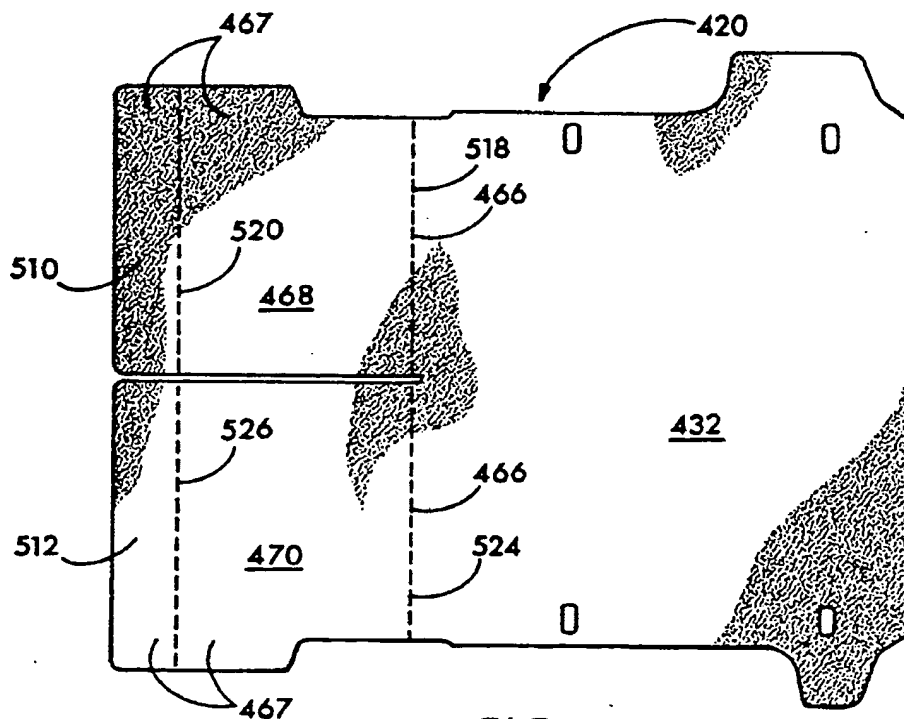


FIG. 12

U.S. Patent

June 21, 1994

Sheet 5 of 6

5,322,335

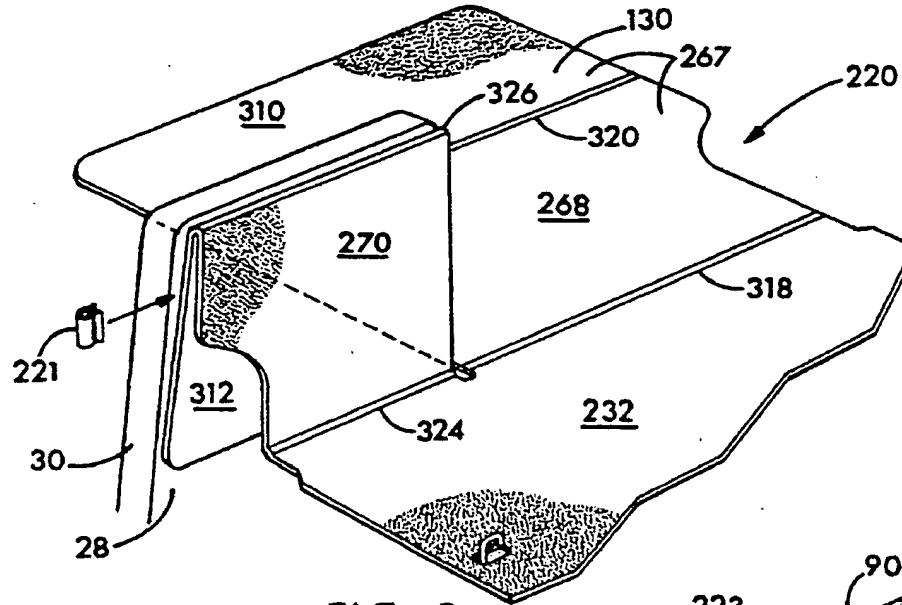


FIG. 8

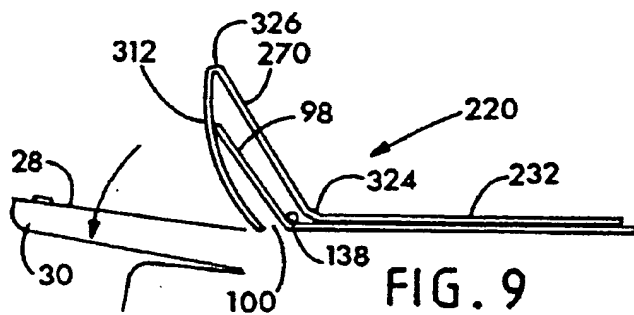


FIG. 9

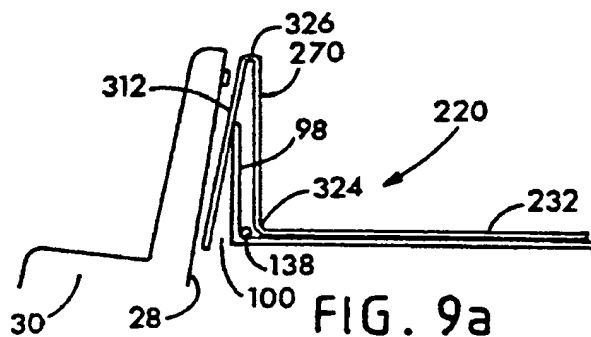


FIG. 9a

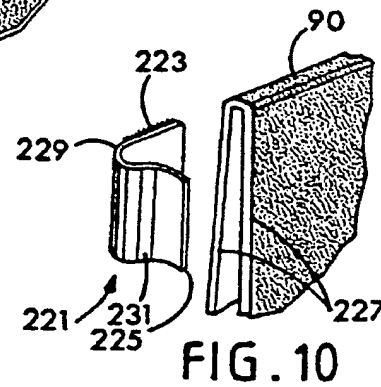


FIG. 10

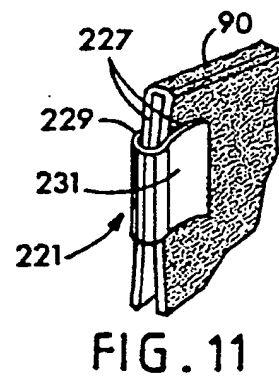


FIG. 11

U.S. Patent

June 21, 1994

Sheet 6 of 6

5,322,335

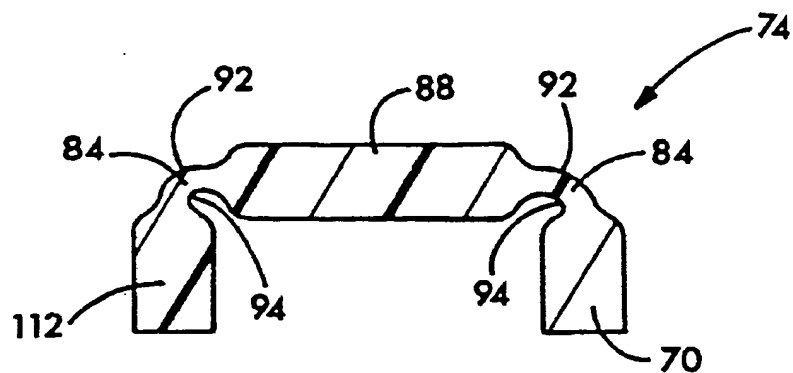


FIG. 13C

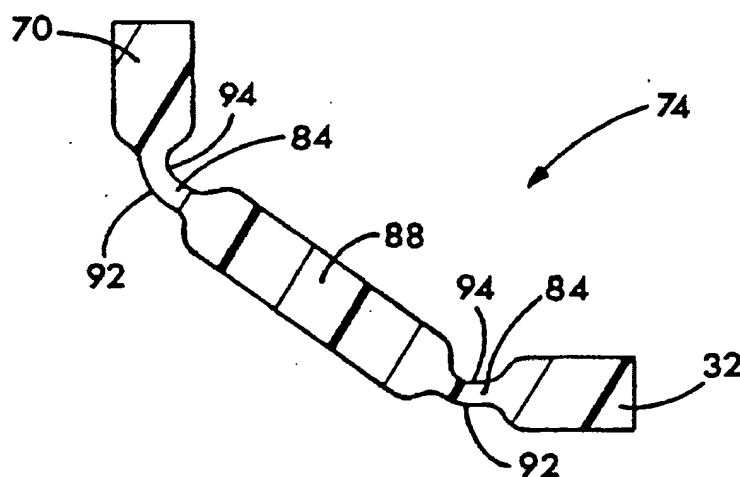


FIG. 13B

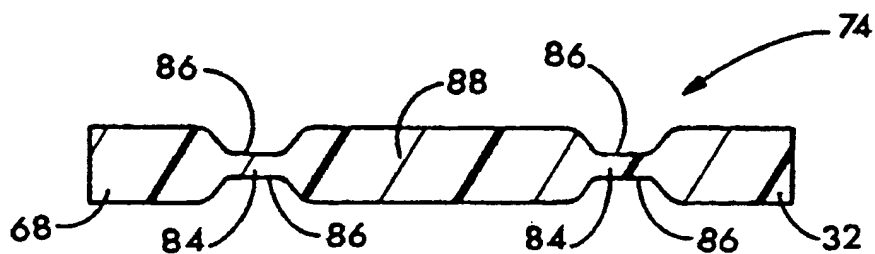


FIG. 13A

5,322,335

1

AUTOMOTIVE FLOOR LINER**FIELD OF THE INVENTION**

This invention relates to automobile floor coverings in general, and to floor coverings for the rear cargo areas of automobiles and sport utility vehicles in particular.

BACKGROUND OF THE INVENTION

The class of vehicles known as sports utility has found growing popularity among consumers. This type of vehicle, exemplified by the Ford Explorer, includes such vehicles as the Chevy S-10 Blazer, the GMC Jimmy, the JEEP Cherokee, and the Oldsmobile Bravada, as well as foreign models including the Isuzu Rodeo, Mitsubishi Montero, Nissan Pathfinder, and the Toyota 4-Runner. The reason for their popularity is associated with their truck-like performance, including four-wheel drive, with a somewhat roomier stationwagon-like interior. The sports utility vehicle is characterized by having rear seats that fold forward to expand a rear cargo area which may be accessed through a rear hatch-back door. The sports utility vehicle is typically available in three- and five-door models and is well-suited to modern lifestyles, providing the benefits of a truck when towing, driving off-road, or serving as a week-enders utility vehicle. During the week, it handles city traffic and is equipped with the conveniences and small luxuries which the American driver has come to expect in a modern automobile.

One problem, though, can intrude between the synergistic mating of the automobile and truck, which is the essence of the sports utility vehicle. That conflict centers on the cargo area. The very essence of a truck is the ability to transport cargo from point to point. The Sports Utility Vehicle is admirably adapted to do just that. However, many objects and materials which one would not hesitate to haul about in a truck would not generally be considered compatible with the back seat of a car. The carpet covering of the vehicle's cargo area is susceptible to damage and soiling from contact with tools, equipment, supplies, and other objects which may commonly be hauled.

Various covers for rear cargo areas have been developed. However, these prior articles, in order to provide coverage for the cargo area when the seat backs are both elevated and collapsed, have typically employed a plurality of separable but interengaged units, which are not only costly to manufacture, but require assembly, run the risk of separating, and are susceptible to the penetration of liquids to the carpet beneath.

What is needed is a protective system that will protect the cargo area and the rear of the back seats of a sports utility vehicle which is readily cleanable, resists marring, and presents an attractive appearance compatible with a car interior.

SUMMARY OF THE INVENTION

The floor liner of this invention is constructed of a single unitary piece of heavy-gauge extruded high-density polyethylene. The floor liner has a floor panel which covers substantially the entire floor of the cargo area of a sports utility vehicle. The floor panel has a rear end adjacent to the rear door of the vehicle, and a forward end adjacent to the rear seat of the vehicle. The floor panel sides extend along and are tucked under the vehicle wheel well trim panels on either side of the

2

cargo area. Left and right ears extend from the left and right rear corners of the floor panel behind the left and right wheel well trim panels. There are four cargo hook access holes, two spaced along each side of the floor panel, and positioned to overlies the cargo hooks in the floor of the vehicle cargo area.

Two cargo extension panels are integrally formed with, and attached to, the forward edge of the floor panel. The cargo extension panels form a continuation of the forward edge of the cargo floor panel and are separated from each other by a frontwardly extending cut-away seat back accommodation slot. Each panel corresponds to the width of the seat back positioned forward of each cargo extension panel. Thus, the cargo area may be extended by folding forward one or both of the two rear seat backs.

Recumbent panels extend forwardly from the cargo extension panels. Seat back panels extend forwardly from the recumbent panels. The joints between the seat back panels and the recumbent panels, and between the recumbent panels and the cargo extension panels, and between the cargo extension panels and the cargo floor panel, are of the type known as a "living hinge" formed from the material of the liner itself. The living hinges which join the panels and provide hinging flexure between the panels are compound hinges formed of two parallel, closely spaced living hinges which are cold-formed into the material of the liner. The double living hinges provide a resilient, long-lasting hinge which is impervious to liquids. The double hinge further provides flat extended edges of improved appearance and safety.

One type of sports utility vehicle has a spring-loaded cargo bed extension which fills the gap between the back seats and the cargo bed when the seats are collapsed forward to provide greater cargo room. In one embodiment of the invention, the cargo extension member of the sports utility vehicle is used to bias and support the cargo extension panel, the recumbent panel, and the seat back panel, in an upright position adjacent to the rear seat of the sports utility vehicle. When the rear seats are collapsed forward the length of the three-hinged panels (the seat back panels, the recumbent panel, and the cargo extension panel), is such that when they are extended flat to lie in the plane of the cargo panel, they cover the cargo extension member and the rear seat backs of the vehicle.

It is an object of the present invention to provide an automotive floor liner which is impervious to liquids.

It is another object of the present invention to provide an automotive floor liner constructed in one piece which is also expandable.

It is a further object of the present invention to provide an automotive floor liner which underlies the wheel well trim panel of a sports utility vehicle.

It is a still further object of the present invention to provide an automotive floor liner of attractive appearance with a durable, easily cleaned surface.

It is yet another object of the present invention to provide an automotive floor liner which may be cost-effectively formed by cold pressing from extruded, high-density polyethylene.

Further objects, features and advantages of the invention will be apparent from the following detailed description when taken in conjunction with the accompanying drawings.

3

5,322,335

4

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a perspective view of the floor liner of this invention installed in a sports utility vehicle, partly cut away.

FIG. 2 is a top plan view of the floor liner of FIG. 1.

FIG. 3 is an isometric view of the floor liner of FIG. 1 shown in relation to the interior wheel wells of a sports utility vehicle.

FIG. 4 is a fragmentary isometric view of the floor liner of FIG. 1 with one expansion flap shown folded and another expanded.

FIG. 5 is a side elevational view of the floor liner of FIG. 1 undergoing installation to cover the seat back of the rear seat of an expanded cargo area.

FIG. 5a is a side elevational view showing the floor liner of FIG. 1 installed with an upright rear seat back.

FIG. 6 is a plan view of an alternate embodiment of the floor liner of FIG. 1.

FIG. 7 is an isometric view of the configuration of the floor liner of FIG. 6, with fasteners partly exploded, as installed in a Ford Explorer sports utility vehicle.

FIG. 8 is a partial isometric view of the floor liner of FIG. 6 with one expansion panel shown folded and one expanded.

FIG. 9 is a side elevational view of the floor liner of FIG. 6 showing how the floor liner may be expanded to cover the seat back of the rear seat of an expanded cargo area.

FIG. 9A is side elevational view showing the installation of the floor liner of FIG. 6.

FIG. 10 is a fragmentary exploded isometric view of the retentive clip used with the alternative embodiments of FIGS. 6 and 12.

FIG. 11 is a fragmentary isometric view of the clip of FIG. 10 installed as in FIG. 7.

FIG. 12 is a top plan view of an alternative embodiment of the floor liner of this invention for use in a two-door sports utility vehicle.

FIG. 13A is a cross-sectional view taken along section line 13A—13A of FIG. 4.

FIG. 13B is a cross-sectional view taken along section line 13B—13B of FIG. 4.

FIG. 13C is a cross-sectional view taken along section line 13C—13C of FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring more particularly to FIGS. 1-13C, wherein like numbers refer to similar parts, an integral plastic floor liner 20 is shown in FIG. 1-5A. The floor liner 20, as shown in FIG. 1, is designed for installation in a sports utility vehicle 22. The liner 20 protects the floor 24 of the rear cargo area 26 of the sports utility vehicle 22. The liner 20 also protects the rear seat back surfaces 28 of the rear seats 30 or the vehicle 22. The liner 20 is formed from a single sheet of extruded plastic which has depressions pressed into it to define horizontally extending living hinges. The hinges divide the liner 20 into panels. A floor panel 32 covers the floor 24; cargo extension panels 68, 70 cover the rear seat backs 28; and recumbent panels 110, 112, and seat back panels 114, 116 provide an expandable cover for the collapsed seat back.

The floor liner 20 floor panel 32 substantially covers the floor of the cargo area 24. The floor panel 32 has a rear end 34 adjacent to the rear door 36 of the vehicle

22. The floor panel 32 has a right side 38 and a left side 40. As shown in FIG. 3, the right side 38 of the floor panel 32 lies parallel to and is tucked under a right wheel trim panel 42. Similarly, the left side 40 of the floor panel 32 is tucked under the left wheel trim panel 44.

The floor panel 32 has a right ear 46 and a left ear 48 which extend from the sides 38, 40 adjacent to the rear edge 34 of the floor panel 32. The right ear 46 has a forward edge 50 which is tucked under the rearward edge 52 of the right wheel trim panel 42. Similarly, the left ear 48 has a forward edge 54 which extends under the rearward edge 56 of the left wheel well trim panel 44. The right ear 46 extends for a slightly greater distance along the right floor panel side 38 than the left ear 48 extends along the left floor panel side 40. The ears 46, 48 and the floor panel 32 generally conform to the floor of the cargo area 24.

The wheel trim panels 42, 44 overlie the forward edges 50, 54 of the ears 46, 48 together as well as portions 58, 60 of the floor panel sides 38, 40. This engagement of the liner 20 beneath the wheel trim panels 42, 44 serves to position and hold the floor liner 20 in position overlying the floor 24 of the cargo area 26.

The floor panel 32 has four cargo hook access holes 62 which allow access to cargo hooks 64, best shown in FIG. 4.

The vehicle 22 has rear seats 30 which may extend upwardly for carrying passengers, and which may be collapsed frontwardly to expand the cargo area of the vehicle. When collapsed the seat backs 28 are coplanar with the cargo area floor and form an extension of the cargo area. In some vehicles there may be a gap between the collapsed seat back and the cargo area floor, but often a hinged metal extension flap 98 is provided by the manufacturer to bridge this gap. Typically the seat backs 28 are carpeted to match the cargo area floor 24.

The forward end 66 of the floor panel 32 is adjacent to the rear seats 30 of the vehicle 22. The two cargo extension panels 68, 70 are integrally joined to and formed with the floor panel 32. The right cargo extension panel 68 and a the left cargo extension panel 70 extend frontwardly from the floor panel 32 along a double living hinge 74, and are separated from each other by a frontwardly opening seat back accommodation slot 72. The double living hinge 74 is composed of two parallel and closely spaced individual living hinges 84, best shown in FIGS. 13A through C. "Living hinge" is a term of art in the plastics industry referring to a hinge made out of the parent material from which the object incorporating the hinge is constructed. Normally, living hinges are co-formed with the plastic object of which they form a part and are thus created by the injection molding process or the thermoforming process. The double living hinge 74 employed in the floor liner 20 is cold-pressed by a metal die into the floor liner 20, forming a neck 86. The neck 86 renders the liner flexible, creating a living hinge 84. Two living hinges 84 are spaced apart approximately $\frac{1}{8}$ of an inch to form the double living hinge 74 as shown in FIG. 13A-13C. The $\frac{1}{8}$ inch wide hinged strip 88 formed between the living hinges 84 structurally isolates the living hinges 84 from each other and forms an attractive, blunted edge 90, best shown in FIGS. 10 and 11.

The double living hinge 74 between the floor panel 32 and the extension panels 68, 70 is divided by the slot 72 into a right hinged joint 118 and a left hinged joint 124.

5,322,335

5

Each hinged joint provides a pivotable connection between an extension panel 68, 70 and the floor panel 32.

The seat back accommodating slot 72 has a stress-relieving bottom 80 which extends into the floor panel 32 a short distance beyond the line 82 defined by the double living hinge 74 between the cargo extension panels 68, 70 and the floor panel 32. The extension of the seat back accommodation slot 72 into the floor panel 32 serves an important structural function. The bottom of a slot is normally an area of high stress, particularly in the floor liner 20 where the panels 68, 70 are independently hinged on either side of the slot. By extending the slot bottom 80 into the floor panel 32, and further by terminating the slot bottom 80 in a gentle curve, two functions are achieved. First, the gentle curve spreads the stresses out, allowing the maximum amount of liner material to resist the tearing or shearing force which may develop at the slot bottom 80. Second, the slot bottom 80 is positioned not within the reduced thickness of the hinge neck, but within the full thickness of the floor panel 32, which has a thickness of approximately eighty thousandths inches. Thus any shearing or tearing force developed by the differential movement of the right hinge joint 118 and the left hinge joint 124 will be resisted by the full thickness of the body of the floor panel 32.

The floor liner 20 is constructed from high density polyethylene, which is a tough, tear-resistant material. This toughness is also important in resisting tearing at the bottom 80 of the slot 72.

Referring to FIGS. 13B and C, the living hinges 84 function by the resilient deformation of the high-density polyethylene from which they are formed. The outside portions 92 of the hinge neck 86 are put in tension when the living hinges 84 are bent. At the same time, the neck inside portions 94 are put in compression. As is apparent from FIGS. 13A, B, and C, the greater the angle about which the hinge is bent, the greater the tension and compressive strains induced in the hinge neck 86. Excessive strain in the hinge neck 86 can lead to eventual failure of the living hinge 84. The use of two living hinges joined by a central hinge strip 88 reduces by half the angle through which each hinge 84 must be bent. For example, in FIG. 13B, the double living hinge 74 forms an angle of 90 degrees between the floor panel 32 and the cargo extension panel 70. However, each living hinge 84 experiences a 45 degree bend.

Similarly, in FIG. 13C, the double living hinge 74 is shown forming a 180 degree angle between the cargo extension panel 70 and the recumbent panel, yet each of the living hinges 84 in FIG. 13C is only bent through a 90 degree angle. Accordingly, the life of the double living hinge greatly exceeds that of a single living hinge and facilitates the long life and durability which is desired of the floor liner 20.

The formation of the living hinges 84 by cold-pressing requires a material which does not excessively work harden or lose its resiliency in response to the cold-working associated with cold-pressing. High density polyethylene of approximately 80 thousandths of an inch thickness, when cold-pressed to form hinges of 35 thousandths nominal width, has proven effective in practice.

As shown in FIG. 4, the sports utility vehicle 22 is equipped with a spring loaded cargo bed extension flap 98 which is hinged to the cargo floor and fills the gap 100 formed between the floor of the cargo area 24 and the rear seat back surface 28 when the rear seat back of

6

the vehicle 30 is collapsed forward. The cargo bed extension flap 98, shown in FIGS. 4, 5, 5A, 9 and 9A, is divided into two portions, a right portion (not shown) and the left portion 102. Each portion of the spring loaded cargo bed extension flap 98 is approximately as wide along the forward end 104 of the cargo area 26 as the right seat back 106 and the left seat back 108 respectively.

The liner 20 is configured to cooperate with the metal extension flap 98 to retain the protective panels of the liner engaged against the rear seat backs while eliminating the necessity of in any way connecting the liner to the seat backs. The coverage for the portion of the seat back which is exposed above the metal extension flap 98 is provided by the seat back panels 114, 116. The seat back panels are hinged to recumbent panels 110, 112, and both sets of panels are pressed against the seat backs by the spring-loaded metal extension flap 98.

The right recumbent panel 110 and the left recumbent panel 112 are co-extensive with and joined by double living hinges 74 to the right cargo extension panel 68 and left cargo extension panel 70 respectively. The recumbent panels 110, 112 are in turn joined to the co-extensive right seat back panel 114 and left seat back panel 116 by double living hinges 74.

As shown in FIG. 4, when the seat backs are in an upright position, the extension panels overlie the metal extension flap, and the flap 98 is sandwiched between the folded liner extension panel and recumbent panel. The seat back panel is hinged to the recumbent panel and extends upwardly to cover the rear seat back. When the rear seat is folded down to extend the vehicle cargo area, the recumbent and seat back panels are released from underneath the vehicle extension flap 98 and are laid out flat to cover the seat back in its collapsed position. A user need not release any fasteners or in any way connect the liner in either configuration.

As shown in FIG. 2, the cargo floor liner 20 floor panel 32 has two sets of three hinged panels along its forward end 66. The set corresponding to the right seat back 28 includes a right cargo extension panel 68, joined by a first right hinge 118 to the floor panel 32; a right recumbent panel 110 joined by a second right hinge 120 to the right cargo extension panel 68; and a right seat back panel 114, joined by a third right hinge 122 to the right recumbent panel 110.

The set of panels corresponding to the left rear seat back includes a left cargo extension panel 70 joined by a first left hinge 124 to the floor panel 32; a left recumbent panel 112 joined by a second left hinge 126 to the left cargo extension panel 70; and a left seat back panel 116 joined by a third left hinge 128 to the left recumbent panel 112.

The right panels 68, 106, 110 are divided from the left panels 70, 108, 112 by the seat back accommodation slot 72. Each of the hinges 118, 120, 122 is co-linear with the opposed hinge 124, 126, 128 in corresponding left and right panels.

The floor liner 20 is designed to cover the cargo area 26 exposed when the rear seats 30 of the vehicle 22 are in the upright position as well as the extended cargo area 130 which is exposed when one or more of the rear seat backs 106, 108 is folded forward. To accomplish this, the floor liner 20 is designed according to the following rule:

1. The length of the cargo area 26 is measured along the floor 24 from the rear of the cargo area to the forward end of the cargo area (this distance is equivalent

5,322,335

7

to the length of the liner floor panel 32 from the rear edge 34 to the forward end 66). The distance from the rear of the cargo area to the top 132 of the seat back surface 28 is added to this measurement to obtain the upright coverage length.

2. Next the length of the extended cargo area 130 is measured. This is the distance between the rear edge 34 and the top of the seat back 132 when the seat backs 106, 108 are in the forward collapsed condition.
3. The length of the upright coverage length is subtracted from the extended cargo area length to yield the expansion length.
4. The expansion length is divided in half and is used as the length of the recumbent panels 110, 112.
5. The length of the cargo extension panels 68, 70 is chosen to slightly exceed the length of the spring loaded cargo bed extensions 98. The seat back panels 114, 116 are then chosen with sufficient length so that the seat back panel forward edges 134, 136 reach the top of the seat back 132.

In other words:

$$\text{length of recumbent panel} = \frac{(\text{length of extended cargo area} - \text{upright coverage length})}{2}$$

Because the length of the recumbent panels 110, 112 is subtracted from the overall length of the floor liner 20 when in the upright portion, but is added to the overall length when the liner 20 is in the recumbent portion, it has the effect of extending the floor liner by twice its own length, which is the needed expansion length.

The function of the spring loaded cargo bed extension flap 98 is illustrated in FIGS. 5 and 5A where the left spring-loaded bed extension flap 102 is shown in FIG. 5A to support and hold the left cargo extension panel 70, left recumbent panel 112, and left seat back panel 116, in a collapsed but upright position against the rear seat back 108. Similarly, the right spring loaded bed extension flap (not shown) biases and supports the right panels 68, 110, 114 against the right rear seat back 106. The spring loaded cargo bed extension has a hinge 138 which incorporates a spring (not shown), which biases the cargo bed extension flap 98 to a flat or recumbent position.

Further improving the function and appearance of the floor liner 20 is the leather-grained texture 140 which is formed in the cargo-engaging upper surface 142 of the floor liner 20. The leather-grained surface 140 is formed into the material from which the floor liner 20 is made. High-density polyethylene is extruded to form sheets which are then rolled between rollers to achieve the final thickness of approximately 80 thousandths of an inch. The surface of the upper roller employed has a leather-grain texture formed thereon, and therefore imparts a leather-grained surface to the floor liner 20. The floor liner 20 is manufactured from appropriate sheet stock by a punching operation which cuts the liner 20 to size in a cold-forming operation which also forms the living hinges 84.

The leather-grain surface by itself or in combination with a co-extruded plastic layer with a high coefficient of friction provides a durable, tough surface impervious to water and most chemicals. This surface may also be easily cleaned by removing the liner from the vehicle and scrubbing it down with a mild detergent and cold water. Further, the textured surface tends to hide any slight scratches which accumulate on the tough, mar-

8

resistant plastic liner. Because the liner is formed of a homogenous material in which the pigment is continuous throughout the depth of the liner material, scratching or marring the liner does not produce a surface of varying color.

In forming the living hinges 84, it may be desirable to leave a small band of undeformed material approximately the width of the floor liner thickness between the living hinge and the edges of the floor liner to reduce the possibility of the liner tearing along one of the living hinges 84.

The right cargo extension panel 68 has a right wheel cut-out 69, which has a side 65 which is off-set from the right floor panel, side 38, so that the right cargo extension panel 68 may freely swing into an upright position by accommodating the right wheel trim panel 42. Similarly, the left cargo extension panel 70 has a wheel cut-out 71, with a side 63, which extends inward of the left floor panel side 40, so accommodating the left wheel trim panel 44.

An alternative floor liner 220 of the present invention is shown in FIGS. 6, 7, 8, 9, and 9A. The floor liner 220 is also adapted for use with a four-door sports utility vehicle 22. The floor panel 232 is similar to the floor panel 32. It has side panels 238, 240 which tuck under the wheel trim panels 42, 44 and has sideward extending ears 246, 248.

The floor liner 220 differs from the floor liner 20 in having a forward extension 267 composed of two sets of two panels, a right cargo extension panel 268 and left cargo extension panel 270, and a right recumbent panels 310 and a left recumbent panels 312. The recumbent panels 310, 312 are joined to the extension panels 268, 270 by double living hinges 320, 326. The cargo extension panels 268, 270 are joined to the forward end 266 of the floor panel 232 by double living hinges 318, 324. The design of the floor liner 220 is accomplished by making the cargo extension panels 268, 270 of sufficient height to extend to the tops 132 of the rear seat backs 106, 108. The recumbent panels 310, 312 are then chosen with a length equal to the difference between the length of the cargo area 26 and the length of the extended cargo area 130. Because the recumbent panels 310, 312 do not add or subtract from the length of the floor liner 220 when they are in their stowed position as shown in FIGS. 7, 8 and 9A, and add when they are in their extended position as shown in FIG. 8, it is necessary only that they be as long as the extension, achieves the desired adjustability in the floor liner 220.

In addition to utilizing the spring loaded cargo bed extension flap 98 to position the forward extensions 267 of the floor liner 220 against the rear seat back surfaces 28, four clips 221 are employed as shown in FIG. 7. The clips 221 are shown in more detail in FIGS. 10 and 11. The clip 221 is backed with mushroom heads 223, which attach the clips 221 to the carpet backing (not shown) of the seat back surface 28. The mushroom heads 223 are similar to the hook portions of a hook and loop fastener such as that manufactured under the trade name VELCRO. The clips 221, once positioned on the seat back rear surfaces 28, are retained by the fasteners 223.

In operation, the free edge 225 of the clip 221 is bent outward as shown in FIG. 10 to allow positioning the edges 227 of the panels 270, 312 between the attached arm 229 and free arm 231 of the clip 221. Thus the clips

5,322,335

9

221 serve to retain the panels 268, 270, 310, 312 against the rear seat back surfaces 28.

FIG. 12 shows how a liner 420 similar to the liner 220 may be adapted to function with a three-door sports utility vehicle (not shown), wherein a smaller increase in the length of the cargo bed results in a shorter recumbent flap.

The floor liner 420 is similar to floor liner 220 in having a forward extension 467 composed of two sets of two panels, right cargo extension panels 468 and left cargo panels 470 and right recumbent panels 510 and left recumbent panels 512. The recumbent panels 510, 512 are joined to the extension panels 468, 470 by double living hinges 520, 526. The cargo extension panels 468, 470 are joined to the forward end 466 of the floor panel 432 by double living hinges 518, 524. The design of the floor liner 420 is accomplished similarly to the floor liner 220 by making the cargo extension panels 468, 470 of sufficient height to extend to the tops 132 of the rear seat backs 106, 108. The recumbent panels 510, 512 are then chose with a length equal to the difference between the cargo area 26 and the extended cargo area 130. The extension length of the recumbent panels 510, 512 is considerably less than in the floor liner 220 of FIG. 6 because of the shorter cargo area 26 of the 3 door sport utility vehicle (not shown).

The floor liner 420 does not utilize the spring loaded cargo bed extension flap 98 to position the forward extensions 467 of the floor liner 420 against the rear seat back surfaces 28. Rather the clips 221 are employed similar to those shown in FIGS. 7, 10 and 11. The clips 221 serve to retain the panels 468, 470, 510, 512 against the rear seat back surfaces 28.

It is understood that the invention is not confined to the particular construction and arrangement of parts herein illustrated and described, but embraces such modified forms thereof as come within the scope of the following claims.

I claim:

1. A unitary protective plastic liner for protecting interior coverings in a cargo area of a vehicle having a floor and a foldable rear seat back, the liner comprising:

- a) a first floor lining panel which is adapted to substantially cover the floor of a vehicle;
- b) two cargo extension panels which extend forward of the first floor lining panel, wherein each panel is pivotally joined to the first floor lining panel by a double living hinge formed of two parallel closely-spaced living hinges; and
- c) each cargo extension panel having a recumbent panel joined to a forward portion of said cargo extension panel by a double living hinge.

2. The liner of claim 1 further comprising a resilient clip mounted to the vehicle rear seat back which engages a recumbent panel to the seat back in an upright position.

3. The liner of claim 2 wherein the clips are releasably attached to a carpet lining on the seat back by means for fastening and wherein the clip has a resilient U-shaped portion for retaining the first panels and the recumbent panels.

4. The liner of claim 1 wherein each recumbent panel has a seat back panel connected to a forward edge thereof by a double living hinge formed of two parallel, closely-spaced living hinges.

5. The liner of claim 1 wherein the first floor lining panel has portions defining access holes for cargo hooks.

10

6. The liner of claim 1 wherein the liner is formed of extruded roll formed high density polyethylene.

7. A protective plastic liner for protecting interior coverings in a cargo area for a vehicle having two independently foldable seat backs adjacent to a rear cargo area having a floor, the liner comprising:

- a) a first floor lining panel adapted to substantially cover the floor of a vehicle, the first panel having a forward end, a rearward end, and two sides;
- b) portions of the first panel which form two opposed sidewardly extending ears adjacent to the rearward end and extending forward, wherein the ears are adapted to underlie two opposed wheel well trim panels;
- c) two cargo extension panels integrally joined to the first floor lining panel forward end, the two panels being joined to the forward end by a double living hinge formed of two closely-spaced parallel living hinges;
- d) each cargo extension panel having a recumbent panel extending forwardly from said cargo extension panel and pivotally joined to said cargo extension panel by a double living hinge formed of two parallel closely spaced living hinges.

8. The liner of claim 7 wherein each of the recumbent panels has a seat back panel connected to a forward edge thereof by a double living hinge formed of two parallel closely spaced living hinges.

9. The liner of claim 7 wherein the first floor lining panel has portions defining access holes for cargo hooks.

10. The liner of claim 7 wherein the liner is formed of extruded roll formed high density polyethylene.

11. In a vehicle having a rear cargo area with interior coverings and a floor, and a protective plastic liner for protecting the interior coverings of a cargo area, wherein the vehicle has two independently foldable seat backs adjacent to the cargo area, and opposed wheel well trim panels covering wheel wells disposed along the side of the cargo area wherein the improvement comprises a unitary plastic liner comprising:

- a) a first floor lining panel which substantially covers the cargo floor of the vehicle, the first panel having a forward end, a rearward end, and two sides;
- b) portions of the first floor lining panel sides which define two opposed, sidewardly-extending ears adjacent to the rearward end of the first floor lining panel, the sides extending forward and underlying the two opposed wheel well trim panels;
- c) two second panels integrally joined to the forward end of the first panel, the two panels being joined to the first panel forward end by a living hinge;
- d) each second panel having a third panel which extends frontwardly from said second panel and is joined to said second panel by a living hinge.

12. The liner of claim 11 where at least one of the living hinges between the panels is a double living hinge formed of two parallel, closely-spaced living hinges.

13. The liner of claim 11 wherein each third panel has a fourth panel which extends forwardly from said third panel, and wherein each fourth panel is joined to said third panel by a double living hinge formed of two parallel, closely-spaced living hinges, and said fourth panel is adapted to overlie a seat back.

14. The liner of claim 11 further comprising portions of the first floor lining panel which define access holes for cargo hooks.

5,322,335

11

15. The liner of claim 11 wherein the liner is formed of extruded roll formed high density polyethylene.

16. In a vehicle having a rear cargo area, a foldable seat with a back adjacent to the cargo area, and a spring-loaded extension flap extending from the cargo area, an improved protective plastic liner for protecting interior coverings comprising:

- a) a first panel which substantially covers the rear cargo area of the vehicle, and which has a first forward end, a rearward end, and two sides;
- b) at least one second panel integrally formed with and pivotally joined to the first panel forward end, wherein the second panel has a forward edge;
- c) at least one third panel integrally formed with and pivotally joined to the forward end of the second panel, and having a forward end;
- d) at least one fourth panel integrally formed with and pivotally joined to the forward end of the third panel, wherein the extension flap is engaged between the second panel and the third panel when the seat is in an upright position, and urges the fourth panel against the seat back, and wherein the second panel overlies the extension flap when the seat is in a collapsed, downwardly folded position.

17. The vehicle and liner of claim 16 wherein:

- a) the second panel has a length in the forward direction;
- b) the third panel has a length in the forward direction; and
- c) the fourth panel has a length in the forward direction; and wherein the length of the second panel plus the length of the fourth panel, less the length of the third panel is equal to approximately the height of the rear seat back so that when the seat is upright, the liner does not extend above the seat,

12

and when the seat is in a recumbent position, the liner unfolds to cover the seat back.

18. The liner of claim 16 wherein the liner is formed of extruded roll formed high density polyethylene.

19. A protective plastic liner for protecting interior coverings in a cargo area for a vehicle having two independently foldable seat backs adjacent to a rear cargo area, the liner comprising:

- a) a first floor lining panel adapted to substantially cover the cargo area of a vehicle, the first panel having a forward end, a rearward end, and two sides;
- b) two cargo extension panels integrally joined to the first floor lining panel forward end, the two panels being joined to the forward end by a living hinge;
- c) each extension panel having a recumbent panel extending forwardly from said cargo extension panel and pivotally joined to said cargo extension panel by a living hinge;
- d) each cargo recumbent panel having a seat back panel extending forwardly therefrom and pivotally joined to said recumbent panel by a living hinge, wherein: i) the cargo panel has a length in a forward direction; ii) the recumbent panels have a length in the forward direction; and iii) the seat back panel has a length in the forward direction; and wherein the length of the cargo panel plus the length of the seat back panels, less the length of the recumbent panel is equal to approximately the height of the rear seat back so that when the seat is upright, the liner does not extend above the seat, and when the seat is in a recumbent position, the liner unfolds to cover the seat back.

20. The liner of claim 19 wherein the liner is formed of extruded roll formed high density polyethylene.

* * * * *



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(12) **United States Patent**
Mills

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(45) Date of Patent: **Oct. 18, 2005**

(54) **FLOOR PANEL**

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(73) Assignee: **Intier Automotive Interiors, Ltd.,
Maidstone (GB)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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B65G 7/04**

(52) U.S. Cl. **296/97.23; 296/39.1; 414/530**

(58) Field of Search **296/39.1, 97.23,
296/39.2, 26.09, 16, 18, 193.07, 191; 414/529,
530**

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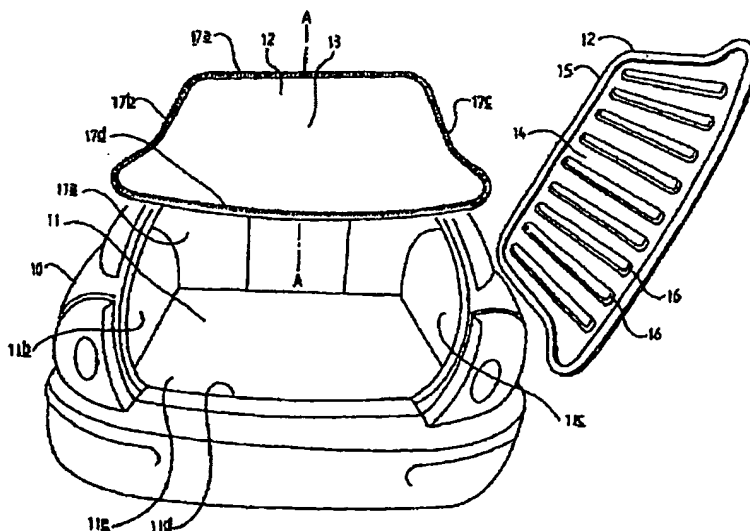
Primary Examiner—Patricia L. Engle

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and Cohn LLP

(57) **ABSTRACT**

A floor panel for a vehicle compartment includes a first surface and a second surface opposite the first surface. The first surface and the second surface have different material properties. One of the surfaces is provided with a plurality of rollers disposed to project above the surface when the surface is uppermost. Both of the first and said second surfaces are capable of being uppermost while the floor panel is located in the vehicle compartment.

15 Claims, 6 Drawing Sheets

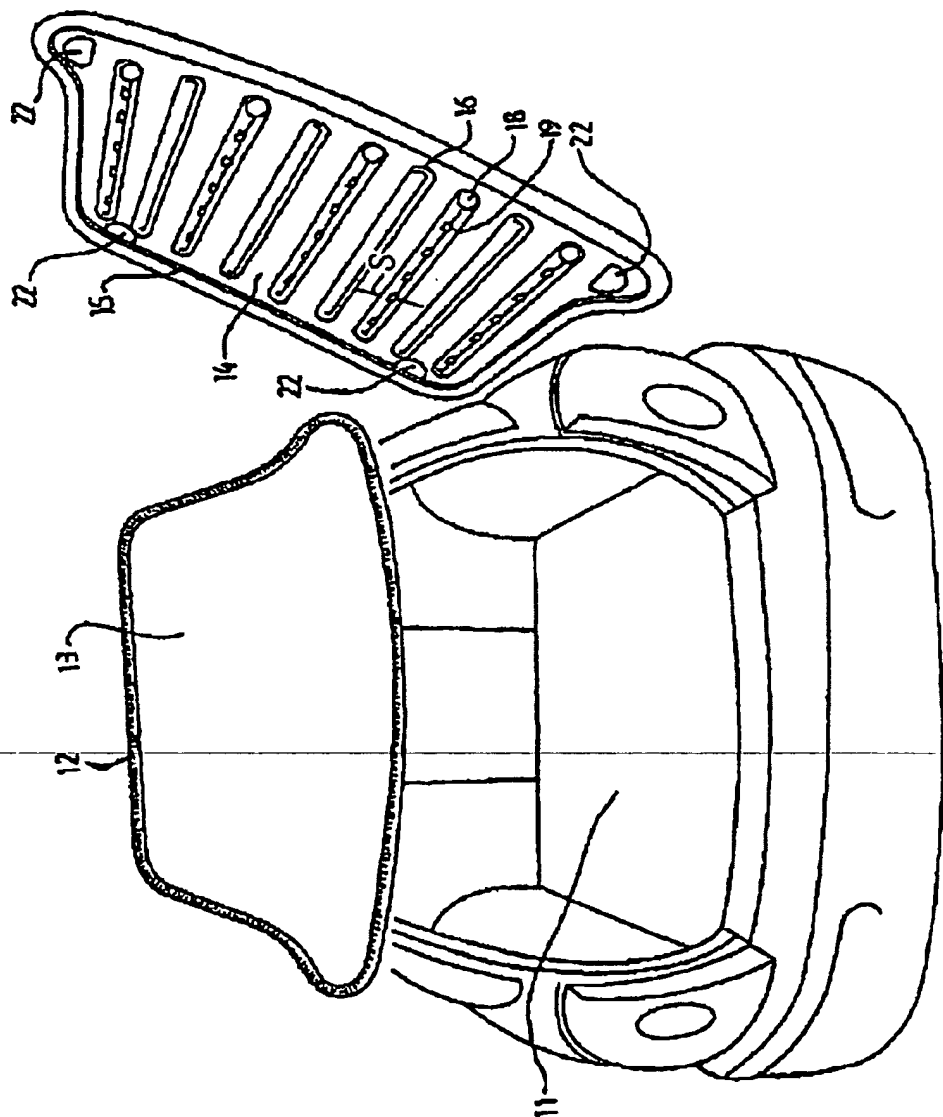


U.S. Patent

Oct. 18, 2005

Sheet 2 of 6

US 6,955,387 B2

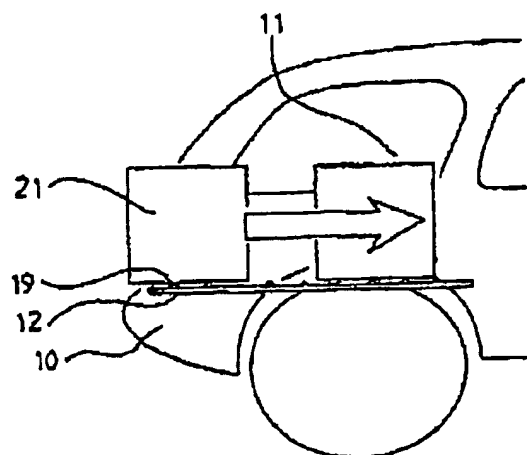
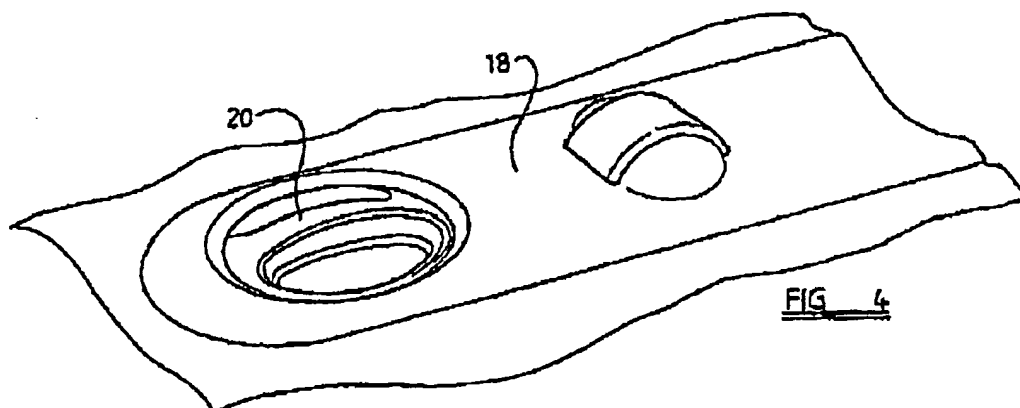
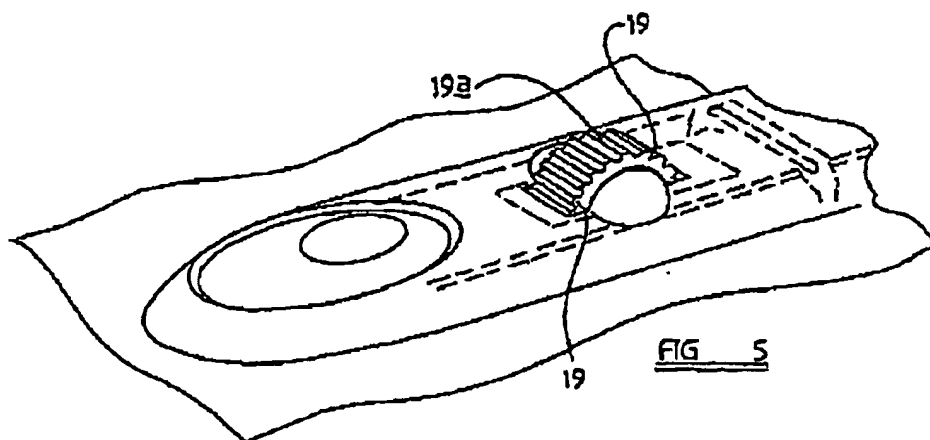


U.S. Patent

Oct. 18, 2005

Sheet 3 of 6

US 6,955,387 B2

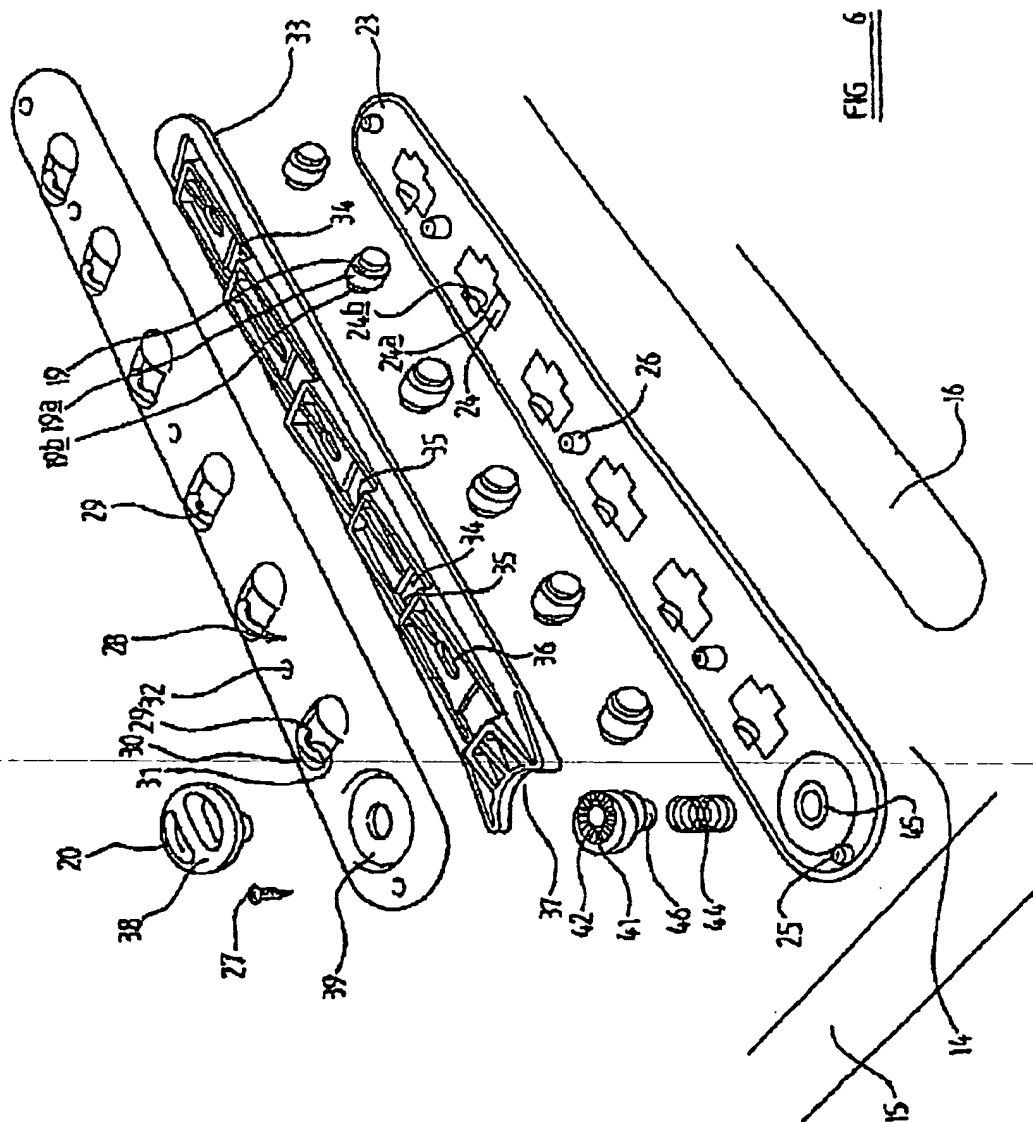
FIG 3FIG 4FIG 5

U.S. Patent

Oct. 18, 2005

Sheet 4 of 6

US 6,955,387 B2



U.S. Patent

Oct. 18, 2005

Sheet 5 of 6

US 6,955,387 B2

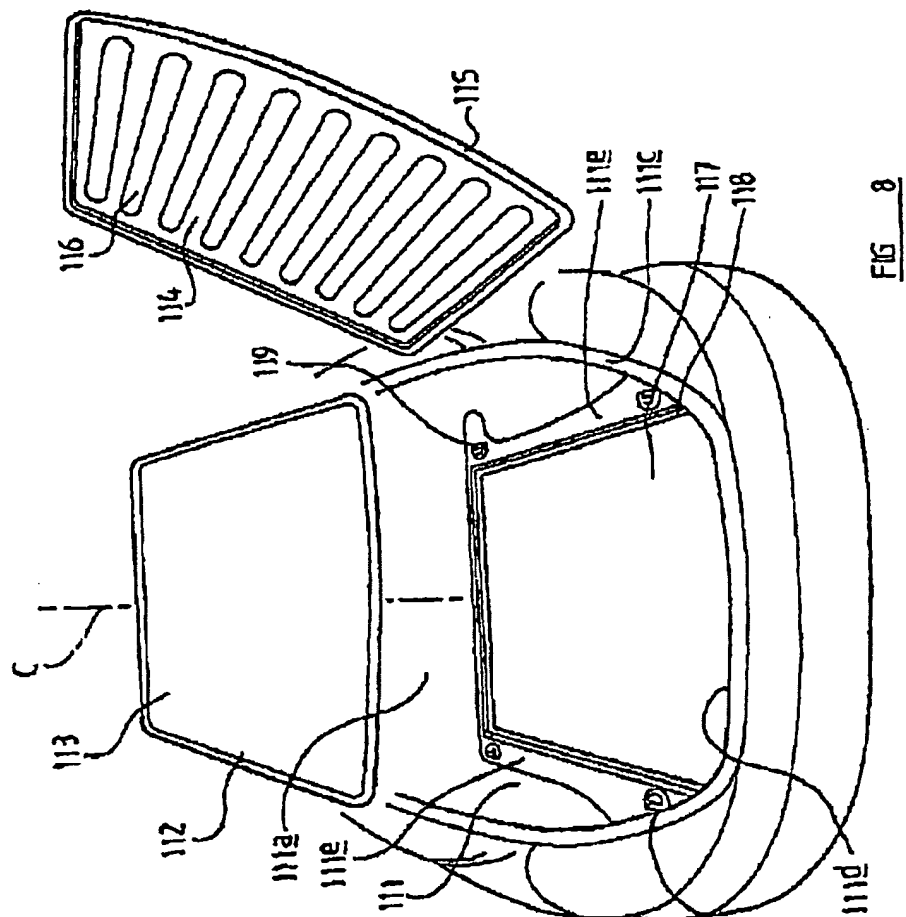


FIG. 8

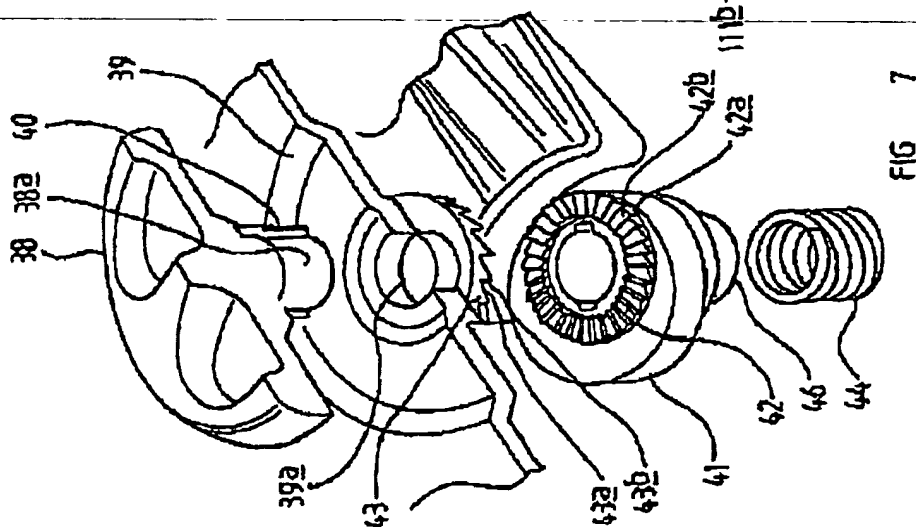


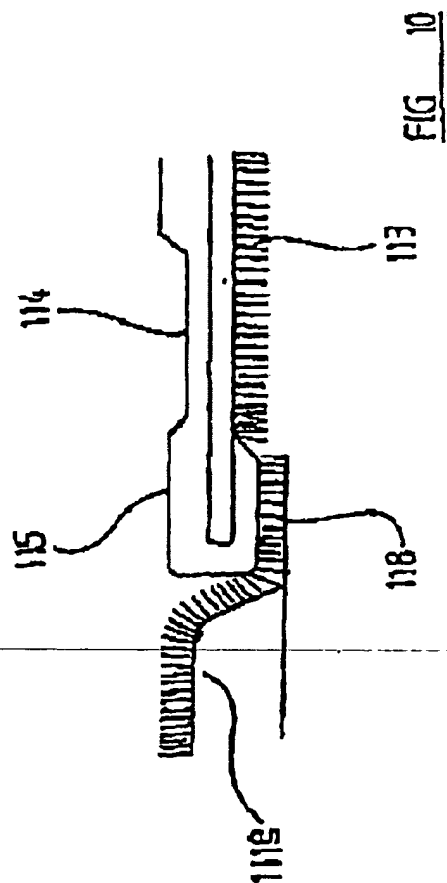
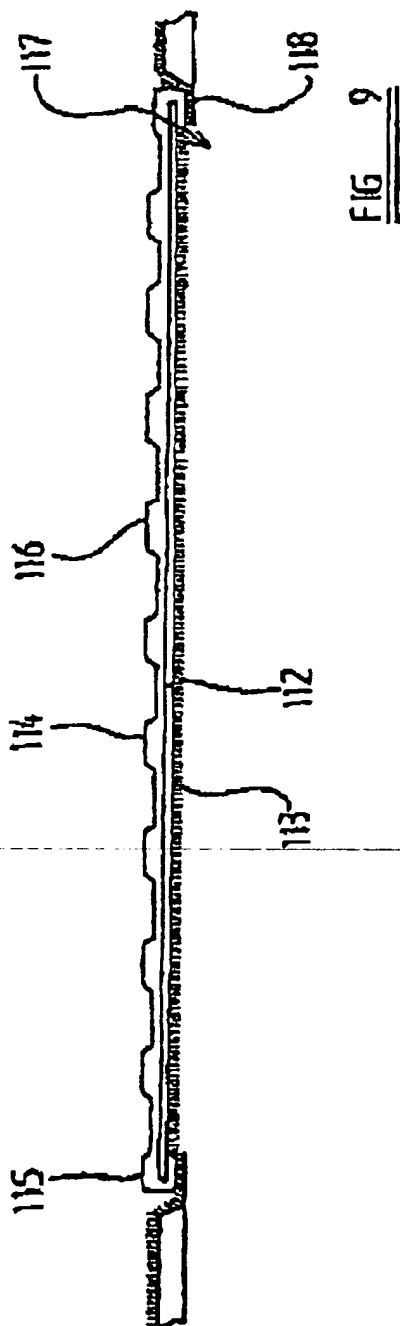
FIG. 7

U.S. Patent

Oct. 18, 2005

Sheet 6 of 6

US 6,955,387 B2



US 6,955,387 B2

1

FLOOR PANEL

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to floor panels for vehicle compartments.

2. Description of the Related Art

In many vehicles, particularly automobiles, it is known to provide vehicle compartments with a suitable trim, for example carpet, to reduce noise, for aesthetic reasons and for comfort of occupants of the compartment if appropriate. However, with use such trim can become soiled or damaged, particularly in load carrying compartments, for example car boots. U.S. Pat. No. 4,944,612 discloses a lining for a load bed of an open-bodied truck, but such a lining is simply intended to cover the exposed metal surfaces of the load bed. German Gebrauchsmuster number DE 29909851 U discloses adapting a vehicle compartment to carry bicycles, but is not generally applicable to other loads.

SUMMARY OF THE INVENTION

An aim of the present invention is to provide a new or improved floor panel.

According to one aspect of the invention we provide a floor panel for a vehicle compartment, the panel comprising a first surface and a second surface, wherein the panel is adapted to be disposed in the vehicle compartment with a selected one of said surfaces uppermost.

One of said surfaces may comprise carpet.

One of said surfaces may comprise a durable surface, preferably comprising a durable polymer.

One of said surfaces may be provided with a plurality of bearing means disposed to project above said surface when said surface is uppermost.

According to a second aspect of the invention we provide a floor panel for a vehicle compartment, wherein the panel comprises a surface and a plurality of bearing means disposed to project above said surface.

The bearing means may comprise a plurality of rollers.

Each of said plurality of rollers may have an axis of rotation, each axis of rotation being generally parallel and wherein said axes of rotation may be disposed such that a load is introduced into the compartment in a direction generally transverse to said axes.

Releasable locking means may be provided to prevent or restrain rotation of said bearing means.

The locking means comprises a locking surface which is moveable into engagement with a surface of the bearing means.

The panel may be adapted to extend across the whole width of the vehicle compartment.

The panel may extend across a part of the vehicle compartment.

The panel may be adapted to engage support means provided in the vehicle compartment.

The panel may be symmetrical.

The panel may comprise anchor means to engage load restraint means.

The anchor means may comprise D-rings.

A surface of the panel may comprise ridges.

Where the panel comprises bearing means, the bearing means may be provided such that they project above the upper surface of said ridges.

2

According to a third aspect of the invention we provide a vehicle comprising a vehicle compartment wherein there is provided a panel according to the first or second aspects of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described by way of example only with reference to the accompanying drawings wherein;

FIG. 1 is a perspective view illustrating a first and second surface of a panel for a compartment of a vehicle according to an embodiment of the present invention.

FIG. 2 is a perspective view illustrating a first and second surface of an alternate panel for the compartment of the vehicle according to an embodiment of the present invention.

FIG. 3 is a side view of a vehicle compartment provided with the floor panel of FIG. 2.

FIG. 4 is a perspective view on a larger scale of part of the panel of FIG. 2.

FIG. 5 is a similar view to FIG. 4 showing an alternative configuration of part of the panel of FIG. 2.

FIG. 6 is an exploded view of part of the panel of FIG. 2.

FIG. 7 is an exploded partially cut-away view on a larger scale of part of FIG. 6.

FIG. 8 is a perspective view illustrating a first and second surface of a panel for an alternate compartment of the vehicle according to an embodiment of the present invention.

FIG. 9 is a section through the panel of FIG. 8 disposed in the vehicle compartment, and

FIG. 10 is a view in more detail of part of FIG. 9.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, a rear part of a vehicle is shown at 10 comprising a vehicle compartment 11 having a forward wall 11a, side walls 11b, 11c, a rear wall 11d and a floor part 11e. A floor panel according to a first embodiment of a first aspect of the present invention is shown at 12. The panel comprises a first surface 13, in the present example comprising a yielding surface such as carpet, and a second surface 14 uppermost, comprising a durable, preferably liquid-resistant surface comprising for example a suitable durable polymer based material bonded or laminated to the underside of the first surface 13. By "durable" we preferably mean a scratch-resistant and liquid resistant material, also preferably a washable and substantially rigid material. The surface 14 comprises a raised edge part 15 extending around the periphery of the panel 12 and a plurality of elongate ridge parts 16 disposed such that when the panel 12 is disposed in the vehicle compartment 11, the ridges 16 extend in a direction from the rear wall 11d towards the front wall 11a. The periphery of the panel 12 is shaped to have a forward part 17a, side parts 17b, 17c, and a rearward part 17d to engage the compartment walls 11a, 11b, 11c, 11d respectively to hold the panel 12 in place within the vehicle compartment 11. The panel is symmetrical about an axis generally shown at A such that the panel 12 may be located in the vehicle compartment 11 with either the first surface 13 or second surface 14 uppermost.

The panel 12 may thus be located in the vehicle compartment 11 to protect the compartment floor 11e, with a desired surface 13, 14 uppermost depending what it is desired to place in the vehicle compartment 11. Where it is desired to

US 6,955,387 B2

3

place a relatively light and/or clean load in the compartment 11, the surface 13 with carpet may be placed uppermost. If a heavy or dirty load is intended to be used, the panel may be removed from the compartment 11, rotated about axis A as shown in FIG. 1 such that surface 14 is uppermost and replaced in the compartment 11. The ridges 16 are oriented to assist loads being pushed or slid into the compartment 11, whilst the ridge 15 retains any spillage or detritus from the load.

Referring now to FIG. 2, a second embodiment of the panel 12 is shown. The same reference numerals are used in FIG. 2 as in FIG. 1 for the same parts. In the second embodiment, however, in addition to ridges 16, the second surface 14 is provided with additional ridge parts 18 having rotatable bearing means, in the present example comprising rollers 19. The rollers 19 are disposed such that they project above the upper surface of the additional ridge parts 18 and are mounted for rotation about a horizontal axis S extending generally transverse to the ridges 18. A manually operable locking means 20 may be provided to stop rotation of the rollers 19 if desired.

As seen in FIG. 3, when it is desired to place a load 21 in the vehicle compartment 11, the panel 12 is disposed in the compartment 11 such that the durable second surface 14 is uppermost. The locking means 20 is activated such that the rollers 19 are able to rotate and the load 21 placed in a rearward part of the compartment 11. The load 11 can then be pushed in a forward direction by virtue of engagement with the rollers 19 until the load is in a desired position. The manually operable braking control 20 may then be operated to lock the rollers 19 to prevent rotation. The surface 14 may be provided with anchor means, in the present example D-rings 22, which for example engage straps or restraining means to hold the load 21 in position.

Referring now to FIGS. 6 and 7, the locking means 20 is shown in more detail. As best seen in FIG. 6, the surface 14 is provided with ridges 16 and with a recessed area 23 to receive a further ridge part 18. Each roller 19 comprises a central cylindrical portion 19a, at either end of which and co-axial therewith with are end cylindrical portions 19b. The recessed area 23 is provided with indents 24 each having an elongate central part 24a to receive the central cylindrical portion 19a of a corresponding one of the rollers 19, and side portions 24b adapted to receive the cylindrical end portions 19b such that the central cylindrical portion 19a is spaced from the floor of the central part 24a.

In the present example, six rollers 19 and corresponding indents 24 are provided in each further ridge part 18, although any number may be provided as desired. The recess 23 is further provided with end connection means 25 and central connection means 26 to receive fasteners 27. The further ridge part 18 is provided by a cover plate 28 provided with a plurality of apertures 29 each corresponding to an indent 24 and through which a corresponding roller 19 passes. Adjacent each aperture 29 is an upstanding ridge portion 30, defining a downwardly opening part cylindrical portion 31, such that when the cover plate 28 is located over the recess 23 each side portion 24b and corresponding part cylindrical portion 31 define a cylindrical recess to receive a cylindrical end portions 19b of a roller 19. The cover plate 28 is further provided with a plurality of fastening holes 32 such that each fastening hole 32 corresponds to an end connection means 25 or a central connection means 26 and through which a fastener 27 is passed.

Disposed between the recess 23 and the cover plate 28 is a braking element 33. The braking element 33 comprises a

4

plurality of apertures 34 each corresponding to a roller 19. Adjacent each aperture 34 is a locking surface 35 adapted to engage a roller 19. A plurality of elongate slots 36 are provided which receive the upstanding connection means 26 such that the braking element 33 is able to move in the direction of the slots relative to the engagement means 26. At the end of the braking element 33 nearest a manual engagable handle 38 is a part circular recess 37. As seen in FIG. 7, the locking means 20 comprises a manually engagable handle 38, part received in a circular recess 39 in the cover plate 28. The handle 38 has a rod part 38a which passes through an aperture 39a in the cover plate 28 and is keyed by lugs 40 to a cam element 41. The cam element 41 is of generally circular cross-section, but is offset from the axis of rotation of the handle 38. A first circular ratchet gear 42 is provided on the upper surface of the cam element 41, and engages a corresponding second circular ratchet gear 43 disposed on the underside of cover plate 28 concentric with the aperture 39a. A resilient biasing means, in the present example a coil compression spring 44 engages a channel 45 of the recess 23 and a lower cylindrical part 46 of the cam element 41, and thus acts to urge the cam element in an upward direction such that the first ratchet gear 42 and second ratchet gear 43 are engaged.

When it is desired to lock the rollers 19 to prevent them from rotation, the handle 28 is turned in a clockwise direction as shown in FIGS. 6 and 7. The cam element 41 is turned in a clockwise direction and inclined surfaces 42a, 43b of the ratchet gear 42 and upper ratchet gear 43 respectively slide over one another against the resistance of the coil compression spring 44. The cam element 41 engages the part circular face 37 of the braking element 33, urging the braking element 33 to the right as seen in FIG. 6 such that the locking surfaces 35 each engage the corresponding roller 19. The friction between the rollers 19 and the locking surfaces 35 thus prevent rotation of the rollers 19. Upstanding edges 42b, 43b of the first ratchet gear 42 and second ratchet gear 43 respectively engage, thus preventing anti-clockwise movement of the cam element 41.

When it is required to release the brake element 33, the handle 28 is depressed against the resistance of the coil compression spring 44 disengaging the first ratchet gear 42 and second ratchet gear 43 and permitting the cam element 41 to rotate anti-clockwise as seen in FIGS. 6 and 7 such that the brake element 33 is permitted to move to the left and disengage the brake surfaces 35 from the respective rollers 19.

Although the bearing means 19 are shown in the present example in a floor panel having a pair of surfaces either which may be selected to be uppermost, in a second aspect of the invention it will be apparent that such bearing means could be provided in a floor panel where only the surface provided with the rollers 19 is intended to be uppermost. Such a panel may be removable, or may be permanently or semi-permanently fixed in place in the vehicle compartment.

As seen in FIG. 5, the rollers 19 may be provided with a surface having toothed projections 19a to engage a load. The bearing means may alternatively comprises spherical or part-spherical elements mounted for rotation, or may be of any other desired shape as appropriate.

Referring now to FIGS. 8 to 10, a vehicle 110 is shown having a vehicle compartment 111 which is not symmetrical about the centre line of the vehicle, unlike the compartment 11 of FIGS. 1 to 3. The compartment 111 comprises side walls 111b, 111c, a rearward wall 111d and a floor 111e. It will be apparent that the side walls 111b, 111c are of different

US 6,955,387 B2

5

configuration and so it would not be possible to provide a reversible panel which engages the side walls 111b, 111c. According to a further embodiment of the first aspect of the invention, and as shown in FIG. 8, a panel 112 is provided wherein the width of the panel 112 is less than the width of the vehicle compartment 111, and wherein the panel 112 is symmetrical about axis C. As in the panels of FIGS. 1 and 2, the panel 112 is provided with a first surface 113 comprising a carpet or like material, and a durable surface 114 provided with a raised periphery 115 and a plurality of ridges 116.

Provided in the floor 111e of the compartment 111 is a support means 117 shaped to receive the floor panel 112. The support means 117 comprises a lip part 118 to receive an edge part 115 provided on the panel 112. The lip part 118 may be provided on an edge part of a deeper recess, for example a well for a spare wheel, or the support means 117 may be only sufficiently deep to receive the panel 112 such that whichever surface is uppermost is generally at the same height as the side parts of the compartment floor 111e. In the embodiment as shown in FIGS. 9 and 10, the panel 112 is preferably provided with edge parts 115 on both surfaces 113 and 114 of the panel 112. The edge parts 115 rest on the lip part 118 in load bearing relation thereto such that the carpet of surface 113 is not crushed or spoiled by transmitting load from the panel 112 to the lip part 118. In this configuration, load restraint means comprising D-rings 119 are provided on the floor 111e of the compartment 111. It will be apparent that the panel 112 may be provided with bearing means or any other feature described herein with reference to the first and second embodiments.

Although the floor panels 12, 112 described herein have been shown as being located in the boot of an automobile, it will be apparent that panels according to the present invention may be used, for example in the foot wells of a passenger compartment of a vehicle, or a loading carrying compartment of any other vehicle as desired.

Although as described, the panel 12, 112 has been stated to comprise a polymer based material to provide the durable side, bonded/laminated to the carpet side, the panel may of course have any suitable structure as desired to provide an appropriate strength panel. The durable surface and carpet may be bonded to a core panel or armature of suitable rigidity, for example a steel plate, or any other structure may be used as desired.

In the present specification "comprise" means "includes or consists of" and "comprising" means "including or consisting of".

The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining

6

the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

While the invention has been specifically described in connection with certain specific embodiments thereof, it is to be understood that this is by way of illustration and not of limitation, and the scope of the appended claims should be construed as broadly as the prior art will permit.

What is claimed is:

1. A floor panel for a vehicle compartment, the panel comprising a first surface and a second surface opposite said first surface, wherein one of said first and second surfaces is provided with a plurality of bearing elements disposed to project above said surface when said surface is uppermost, and wherein both of said first and said second surfaces are capable of being uppermost while said floor panel is positioned completely within the vehicle compartment.

2. A panel according to claim 1, wherein the bearing elements comprises a plurality of rollers.

3. A panel according to claim 2, wherein each of said plurality of rollers has an axis of rotation, each axis of rotation being generally parallel and wherein said axes of rotation are disposed such that a load is introduced into the compartment in a direction generally transverse to said axes.

4. A pane according to claim 1, wherein locking means is provided to releasably prevent rotation of said bearing means.

5. A panel according to claim 4, wherein the locking means comprises a locking surface which is moveable into engagement with a surface of the bearing means.

6. A panel according to claim 1, wherein the panel is adapted to extend across a width of the vehicle compartment.

7. A panel according to claim 1, wherein the panel extends across a part of the vehicle compartment.

8. A panel according to claim 1, wherein the panel is adapted to engage support means provided in the vehicle compartment.

9. A panel according to the panel is symmetrical.

10. A panel according to claim 1, further comprising anchor means to engage load restraint means.

11. A panel according to claim 10, wherein the anchor means comprises D-rings.

12. A panel according to claim 1, wherein one of said surfaces includes ridges.

13. A panel according to claim 1, wherein said first surface has a different material property than said second surface.

14. A panel according to claim 13, wherein one of said surfaces comprises carpet.

15. A panel according to claim 13, wherein one of said surfaces comprises a polymer material.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,955,387 B2
DATED : October 18, 2005
INVENTOR(S) : John M. Mills

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

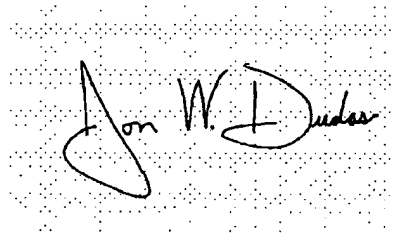
Column 6,

Line 25, please delete "pane" and insert -- panel --.

Line 39, after "according to", insert -- Claim 1, wherein --.

Signed and Sealed this

Twentieth Day of December, 2005

A handwritten signature in black ink, reading "Jon W. Dudas", is written over a rectangular area filled with a fine grid of dots.


JON W. DUDAS
Director of the United States Patent and Trademark Office

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One entry found for C-clamp.

Main Entry: **C-clamp**

Pronunciation: 'sE-'k'lamp

Function: *noun*

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C and G
C.B.D.
C.C.
C-clamp
C def
C corporation
C/D
c/d
C.E.

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noun

Definitions:
curved clamp: a metal clamp shaped like a letter C, with horizontal flat pieces at the ends, that can be adjusted by a screw

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*Exhibit B***bhpatent**

From: send@mail.efax.com
Sent: Saturday, February 04, 2006 4:59 PM
To: bhpatent@comcast.net
Subject: Successful transmission to 15712738300. Re: US Appl. No. 10/707,410 Response to Office Action dated 11/25/2005

Dear Bruce E Harang,

Re: US Appl. No. 10/707,410 Response to Office Action dated 11/25/2005

The 46 page fax you sent through eFax.com to 15712738300 was successfully transmitted at 2006-02-05 00:56:39 (GMT).

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TO _____

COMPANY _____

FAX NUMBER 15712738300

FROM Bruce E Harang

DATE 2006-02-05 00:21:30 GMT

RE US Appl. No. 10/707,410 Response to Office
Action dated 11/25/2005

COVER MESSAGE

Attached is a 1 page transmittal form and a 43 page
amendment in
response to the Office action dated 11/25/2005 for:

US Appl. No.: 10/707,410
Filed: 12/11/2003
Inventor: John S. McKenzie
Confirmation No.: 1409
Art Unit: 3654
Examiner: Thomas J Brahan
Atty. Dkt.: 04112
Atty.: Bruce E Harang
Cust. No.: 23688

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